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FORTY-SIXTH ANNUAL REPORT

OF THE

41740

—OHIO—

State Board of Agriculture,

WITH AN ABSTRACT OF THE PROCEEDINGS OF THE

COUNTY AGRICULTURAL SOCIETIES,

FOR THE YEAR 1891,

TO THE

General Assembly of the State of Ohio.

COLUMBUS, OHIO:

THE WESTBOTE CO., STATE PRINTERS.

1892.

REPORT
OF THE
OHIO STATE BOARD OF AGRICULTURE,
FOR THE YEAR 1891.

To the General Assembly of Ohio:

In compliance with section 3693 of the Revised Statutes, the State Board of Agriculture respectfully submits herewith its forty-sixth annual report.

April 2, 1891, section 341 of the Revised Statutes of Ohio was amended to read as follows:

Sec. 341. That it shall be the duty of the secretary of the State Board of Agriculture to furnish to the supervisor of public printing, all matters for the annual volume of the State Agricultural report, not later than March 15 of each year, and it shall be the duty of the commissioners of public printing to so arrange in letting contracts for public printing, folding, stitching and binding, that the agricultural reports of the State shall be completed and delivered to the Secretary of State by the first day of June, annually, and to be by him forwarded to the parties entitled to receive the same by the first day of July following."

Frequent inquiries by members of the General Assembly have been made for this report since July 1, 1892, and it is proper here to say that the first lot of copy was furnished the State printer as early as February 15, 1892, and at no time has the printer been without copy, until during the week of the State Fair, a call came for the index and this introduction. As the index can not be made until the following report is printed and furnished the Secretary of the Board, there has been a delay, as it was impossible to prepare an index in addition to the multifarious duties incident to the fair. Had the printing been done in accordance with the above section of the statute, there would have been no delay.

Twenty-four thousand copies of the Agricultural report are printed annually, of which nineteen thousand are distributed by the Secretary of State to members of the Legislature, exchanges and so on, and five thousand come to the State Board of Agriculture.

A few years since great numbers of the report were left in the store room because the contingent fund was not sufficient to pay postage and express charges.

Since we have adopted the plan of distributing through the farmers institutes, the supply is exhausted before the close of the year, and we could profitably use ten thousand copies to meet the increasing demand for these reports.

The report of Farmers' Institutes embraces 327 pages, and to meet the urgent calls for it, ten thousand copies extra, in pamphlet form, have been issued.

The increasing interest in agricultural and live stock improvement among the tax payers and producers is a gratifying feature in the work of the Board of Agriculture, and it is unfortunate that the reports can not appear earlier.

The statistical matter in this report is not so full as in former reports, because the returns of assessors, on which our acreage of cereals is based, are not available at the time we are required by law to furnish copy for the printer.

The number of institutes reported is greater than in any former year, and there are from several counties more petitions for institutes than can be held under the present division of the per capita fund.

A financial statement, showing receipts and disbursements by the Board for institutes, will be found on pages 346-349. The reports of expenditures by local societies will be found on pages 350-353.

By the courtesy and help of the officers of the Agricultural Experiment Station, and of the presidents and some of the professors of the three State universities, and by careful arrangement of circuits to save travel, the Board has been enabled to hold more institutes, at less cost than has any other State, notwithstanding in some western states the speakers and officers of their institutes are furnished free transportation, while in Ohio our speakers pay the railways full rates.

The increasing use of commercial fertilizers has enlarged the work of sampling, analyzing and reporting fertilizers. The demand for the fertilizer reports has made it necessary to increase our issue, and yet many general agents are unable to get as many copies as they have agents.

The State Fair was very successful and gave the Board means for painting buildings and making other needed improvements on the Fair Grounds, which are said to be the most complete and attractive in the country.

All of which is very respectfully submitted.

L. N. BONHAM, *Secretary.*

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OFFICERS AND MEMBERS OF THE BOARD.

OFFICERS FOR 1891.

J. M. BLACK, Hanover, Licking county.....	<i>President.</i>
A. H. KLING, Marion, Marion county	<i>Treasurer.</i>
L. N. BONHAM, Columbus, Franklin county.....	<i>Secretary.</i>
J. W. FLEMING, Columbus, Franklin county.....	<i>Assistant Secretary.</i>

MEMBERS FOR 1891.

A. J. CLARK.....	Cambridge, Guernsey county.
W. W. MILLER	Castalia, Erie county.
J. W. POLLOCK.....	Cedarville, Greene county.
N. OHMER.....	Dayton, Montgomery county.
L. G. ELY.....	West Unity, Williams county.
E. L. HINMAN.....	Columbus, Franklin county.
J. C. BOWER.....	Athens, Athens county.
GEO. LEWIS	Van Wert, Van Wert county.

EXECUTIVE COMMITTEE FOR 1891.

J. M. BLACK, <i>President,</i>	A. J. CLARK,	J. W. POLLOCK,
A. H. KLING,		E. L. HINMAN.

OFFICERS FOR 1892.

A. H. KLING, Marion, Marion county.....	<i>President.</i>
W. W. MILLER, Castalia, Erie county.....	<i>Treasurer.</i>
L. N. BONHAM, Columbus, Franklin county.....	<i>Secretary.</i>
J. W. FLEMING, Columbus, Franklin county	<i>Assistant Secretary.</i>

MEMBERS FOR 1892.

A. J. CLARK.....	Cambridge, Guernsey county.
J. W. POLLOCK.....	Cedarville, Greene county.
N. OHMER	Dayton, Montgomery county.
E. L. HINMAN.....	Columbus, Franklin county.
J. C. BOWER.....	Athens, Athens county.
GEO. LEWIS	Van Wert, Van Wert county.
CHESTER BORDWELL	Batavia, Clermont county.
F. A. DERTHICK	Mantua, Portage county.

EXECUTIVE COMMITTEE FOR 1892.

A. H. KLING, <i>President,</i>	E. L. HINMAN,	A. J. CLARK,
J. W. POLLOCK,		W. W. MILLER.

LIST OF THE MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE.

FROM THE FIRST STATE FAIR TO THE YEAR 1892.

Members are elected to serve two years. The Board consists of ten members; [the term of service of five expires annually.]

Name.	Years of service, inclusive.	Post-office.
M. L. Sullivan†	1850-53	Columbus.
R. Medary†	1850-53	Columbus.
M. B. Bateham†	1850	Painesville.
D. Lapham†	1850	Cincinnati.
F. R. Elliott	1850-51	New York.
J. T. Pugsley	1850-51	Convenience.
Arthur Watt†	1850-52	Chillicothe.
J. M. Edwards	1850-52	Youngstown.
C. Springer†	1850-52	Meadow Grove.
J. G. Gest	1850-54	Xenia.
S. Halloway	1851	St. Clairsville.
Allen Trimble†	1851-51	Hillsboro.
William Case†	1852-53	Cleveland.
Philo Adams†	1852-53	Huron.
R. W. Musgrave†	1852-57	Sulphur Springs.
R. W. Steele	1853-56	Dayton.
William H. Ladd	1853-56	Brooklyn, N. Y.
D. McIntosh	1853-54	Shalersville.
J. T. Worthington†	1853-56	Chillicothe.
Joseph Sullivan†	1854-55	Columbus.
John K. Greene	1854-57	Cincinnati.
James L. Cox	1854-55	Zanesville.
B. Stedman†	1854-57	Washington, D. C.
Alexander Waddle†	1855-60	South Charleston.
Abel Krum	1855-58	Cherry Valley.
Lucian Buttle†	1856-59	Columbus.
G. W. Barker†	1856-57	Marietta.
John M. Millikin†	1857-62	Hamilton.
Luther Smith	1857-58	West Liberty.
Thomas S. Webb	1857-58	Massillon.
Norton S. Townshend†	1858-63	Avon.
L. Q. Rawson	1858-59	Fremont.
James M. Trimble†	1858-61	Hillsboro.
John Reber†	1858-61	Lancaster.
D. E. Gardner†	1859-64	Toledo.
William Dewitt	1859-64	Cleveland.
C. W. Potwin	1859-62	Zanesville.
T. C. Jones†	1860-67	Delaware.
Henry B. Perkins	1860-63	Warren.
David Taylor†	1861-66	Columbus.
Jacob Egbert†	1862-63	Lebanon.
Nelson J. Turney†	1862-69	Circleville.
D. McMillan†	1863-70	Xenia.
W. R. Putnam	1863-64	Marietta.
William F. Greer†	1864-67	Painesville.
James Fullington†	1864-69	Irwin Station.
William B. McClung	1864-71	Troy.
James W. Ross†	1865-70	Perrysburg.
R. R. Donnelly†	1865-68	Wooster.

LIST OF MEMBERS.

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MEMBERS OF THE STATE BOARD OF AGRICULTURE—Concluded.

Name.	Years of service, inclusive.	Post-office.
James Buckingham.....	1865-73	Zanesville.
J. Park Alexander.....	1867-70	Akron.
Norton S. Townshend†.....	1868-69	Avon.
William Lang.....	1868-71	Tiffin.
D. C. Richmond†.....	1869-74	Sandusky.
R. P. Cannon.....	1870-75	Aurora.
James B. Jamison.....	1860-77	Cadiz.
L. G. Delano†.....	1870-75	Chillicothe.
L. B. Sprague.....	1871-76	Springfield.
Simpson Harmount.....	1871-76	New Philadelphia.
John A. Warder†.....	1871-76	Cleves.
W. S. Hickox.....	1872-73	Mansfield.
B. W. Carlisle†.....	1872-79	Hooker's Station.
Justus C. Stevens.....	1873-74	Kenton.
John M. Pugh.....	1874-79	Columbus.
L. B. Wing.....	1875-80	Newark.
Russell C. Thompson†.....	1875-76	Sylvania.
Leo Weltz†.....	1876-84	Wilmington.
D. L. Pope.....	1876-81	Welshfield.
Chas. Smith.....	1877-80	Marion.
E. T. Stickney.....	1877-78	Republic.
A. E. Stone.....	1877-78	Gallipolis.
Peter Murphy.....	1877-80	Hughes' Station.
W. N. Cowden.....	1878-84	Quaker City.
R. Baker.....	1879-82	Elvira.
Arvine C. Wales†.....	1879-82	Massillon.
R. H. Hayman.....	1880-81	Portsmouth.
O. P. Chaney.....	1880-82	Canal Winchester.
C. D. Bailey.....	1881-88	Gallipolis.
J. C. Levering.....	1881-86	Leverings.
Wm. S. Foster.....	1881-88	Urbana.
L. B. Harris†.....	1882-87	Upper Sandusky.
J. H. Brigham.....	1882-89	Delta.
L. N. Bonham.....	1883-86	Oxford.
H. Talcott.....	1883-87	Jefferson.
N. A. Sims.....	1883-84	Columbus.
T. P. Shields.....	1884-87	Watkins.
John Pow.....	1884-89	Salem.
S. H. Hurst.....	1884-89	Chillicothe.
J. J. Sullivan.....	1887-88	Millersburg.
Jos. H. Terrell.....	1887-88	New Vienna.
J. G. Russell.....	1887	Mt. Gilead.
H. G. Tryon†.....	1888-91	Willoughby.
J. M. Black.....	1888	Hanover.
A. H. Kling.....	1889	Marion.
H. S. Grimes.....	1889-90	Portsmouth.
A. J. Clark.....	1889	Cambridge.
W. W. Miller.....	1889	Castalia.
J. W. Pollock.....	1890	Cedarville.
N. Ohmer.....	1890	Dayton.
L. G. Ely.....	1890-91	West Unity.
E. L. Hinman.....	1890	Columbus.
J. O. Bower.....	1891	Athens.
Geo. Lewis.....	1891	Van Wert.
Chester Bordwell.....	1892	Batavia.
F. A. Derthick.....	1892	Mantua.

*The old members were re-elected in 1885 and in 1886, no change being made in the Board.

†Deceased.

‡Removed to Columbus.

§Removed to Caldwell, Kansas.

TABLE SHOWING THE PLACE AND RECEIPTS OF EACH STATE FAIR HELD; ALSO A LIST OF THE OFFICERS OF EACH YEAR OR FAIR.

Year.	President.	Treasurer.	Secretary.	Place of fair.	Receipts.
1850.	M. L. Sullivan*	Samuel Medary*	M. B. Betcham*	Cincinnati	\$8,086 18
1851.	same	same	W. W. Mather*	Columbus	8,204 09
1852.	Arthur Watts*	same	same	Dayton	13,980 00
1853.	Samuel Medary*	M. L. Sullivan*	George Sprague.	Cleveland	13,996 37
1854.	R. W. Musgrave*	Joseph Sullivan*	same	Newark	8,824 53
1855.	J. T. Worthington*	same	same	Columbus	9,745 54
1856.	William H. Ladd	Lucian Battles*	same	Cleveland	16,684 20
1857.	Alexander Waddle*	same	John H. Klippart*	Cincinnati	17,530 75
1858.	John M. Millikin*	same	same	Sandusky	9,997 70
1859.	N. S. Townshend	same	same	Zanesville	9,958 83
1860.	Alexander Waddle*	Charles T. Potwin	same	Dayton	11,998 50
1861.	Darwin E. Gardner*	same	same	Cleveland	11,290 64
1862.	Thomas C. Jones*	David Taylor*	same	Columbus	11,142 09
1863.	N. S. Townshend	same	same	Dayton	12,620 54
1864.	Nelson J. Turney*	same	same	Dayton	10,658 65
1865.	same	same	same	Dayton	14,035 80
1866.	Wm. B. McClung	James Buckingham	same	Toledo	18,692 98
1867.	Daniel McMillan*	same	same	same	15,676 25
1868.	James Fullington*	same	same	same	19,606 50
1869.	same	same	same	Springfield	13,252 25
1870.	James W. Ross	J. Park Alexander	same	same	16,460 25
1871.	William Lang	James Buckingham	same	Mansfield	19,149 45
1872.	James Buckingham	Simpson Harmount	same	Columbus	22,517 50
1873.	Lincoln G. Delano*	same	same	same	27,671 79
1874.	same	same	same	same	20,539 30
1875.	R. P. Cannon	same	same	same	11,909 61
1876.	S. Harmount	J. M. Pugh	same	same	21,151 21
1877.	J. B. Jamison	same	same	same	11,979 50
1878.	John M. Pugh	L. B. Wing	same	same	23,682 20
1879.	B. W. Carlisle*	same	Jas. W. Fleming	same	30,703 36
1880.	D. L. Pope	D. L. Pope	W. I. Chamberlain	same	29,706 16
1881.	L. B. Wing	Leo Weltz*	same	same	31,082 52
1882.	W. N. Cowden	W. N. Cowden	same	same	38,513 78
1883.	W. N. Cowden	L. B. Harris*	same	same	33,306 48
1884.	W. S. Foster	same	same	same	29,796 51
1885.	C. D. Bailey	J. C. Levering	same	same	30,533 17
1886.	L. N. Bonham	L. B. Harris*	same	same	30,902 10
1887.	J. H. Brigham	L. B. Harris*	same	Centennial year, no fair.	19,637 41
1888.	John Pow	J. G. Russell	L. N. Bonham	Columbus	27,574 55
1889.	same	same	same	same	33,878 64
1890.	J. G. Russell	A. H. Kling	same	same	
1891.	J. M. Black	same	same	same	

*Deceased.

resigned six months to July 1, when he resigned, and was succeeded by L. N. Bonham, of Oxford.

TRANSACTIONS
OF THE
OHIO STATE BOARD OF AGRICULTURE,
FOR THE YEAR 1891.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, O., *January 15, 1891*—9 o'clock P. M.

The Ohio State Board of Agriculture for 1891, consisting of the following members: Messrs. J. M. Black, Licking county; J. W. Pollock, Greene county; L. G. Ely, Williams county; N. Ohmer, Montgomery county; E. L. Hinman, Franklin county (absent); A. H. Kling, Marion county; A. J. Clark, Guernsey county; W. W. Miller, Erie county; J. C. Bower, Athens county, and George Lewis, Van Wert county (absent), was called to order by President Russell of the Board of 1890, when they proceeded to organize by the election of officers.

On motion of Mr. Ely, Secretary Bonham was instructed to cast the vote of the Board for Mr. J. M. Black for President.

Mr. Black, on assuming the Chair, returned thanks for the honor conferred and announced as the next business in order, the election of a Treasurer.

On motion, the Secretary was instructed to cast the vote of the Board for Mr. A. H. Kling for Treasurer, when he was declared elected.

At this point in the proceedings, Assistant Secretary Fleming read a paper on the work of the State Board, showing comparisons prior to 1880, with the work succeeding that year, demonstrating an increase of work in the department, and a consequent increase in the important duties and responsibilities of the Secretary.

Secretary Bonham followed the paper by stating "that the work of the office was increasing each year. The institute work had more than doubled since he had come into the office and the fertilizer work alone was enough to fully occupy the time of one efficient clerk, if he was at command. Mr. Fleming has been in this office twenty-five years, is popular and efficient, and as to skill in details of State Fair work, he has no equal."

For Secretary Mr. Miller nominated Mr. L. N. Bonham who was duly elected.

On motion of Mr. Kling, and supported by Mr. Ohmer, Mr. James W. Fleming was nominated and duly elected as Assistant Secretary. The gentlemen nominating, also Mr. Miller and Mr. Clark, spoke in complimentary terms of the paper read by Mr. Fleming, and in indorsement of its contents. On motion of Mr. Kling, the paper was ordered incorporated in the minutes.

Mr. Clark presented the following, which was unanimously adopted:

Resolved, That the thanks of this Board are due, and hereby tendered to the retiring President, Mr. J. G. Russell, and to the retiring member, Mr. H. S. Grimes, for their faithful and valuable services in the Board and their earnest efforts in the interest of agriculture, and while we regret the loss of their wise counsel and pleasant association at our Board meetings, we shall ever remember and appreciate them.

On motion the Board adjourned to meet Monday, February 9th, at 7 o'clock P. M.

The following is the paper read by Assistant Secretary Fleming at the meeting January 15, and by vote ordered incorporated in the minutes:

THE WORK OF THE STATE BOARD OF AGRICULTURE OF OHIO, PAST
AND PRESENT.

GENTLEMEN: For your information I desire to present a few thoughts and comparisons relative to the work of this Board and the position it occupies in the matter of economic management in the transaction of its greatly increased business.

The State Board of Agriculture was organized under a law passed February 28, 1846, which law was not specific in its provisions, but broad enough to permit the Board to choose for itself the character of detail work to be performed that might tend to promote the agricultural interests of the state. An annual meeting or convention was authorized to be held, at which the presidents of county agricultural societies were, for the time being, *ex-officio* members of the State Board. The purpose of this

annual meeting or convention was to deliberate and consult as to the wants, prospects and condition of the agricultural interests throughout the State, and to elect persons to fill vacancies in the Board of Agriculture.

It was made the duty of the State Board to submit an annual report to the General Assembly of the State, embracing the proceedings of the Board for the past year, and an abstract of the proceedings of the several county agricultural societies, as well as a general view of the conditions of agriculture throughout the State, accompanied by such recommendations as they deemed interesting and useful.

The first few years of the Board's existence, its work consisted almost wholly of correspondence with the county societies, preparation for the annual meeting and the compiling of an annual report, which report consisted of the minutes of the Board meetings, proceedings of the annual convention, essays on agricultural topics contributed by the friends of the cause, and remarks by officers of the county societies relative to the kind of crops grown and the prospect and condition of each.

In 1850 the Board determined to broaden its scope of usefulness by establishing an exhibition of agricultural and mechanical products to be known as the Ohio State Fair. At this early day the move was looked upon as a great undertaking that would involve an immense amount of labor to the Board and its Secretaries. All possible efforts were bent toward making the inaugural fair a successful exhibition, and while a mere pigmy as compared with the exhibitions of later years, it was a success and fairly represented the times.

The fair being now permanently settled upon as an annual occurrence, the Board was considered in proper trim for future progress in the line of advancing the agricultural interests of the State. For the correspondence, arranging for the annual convention, preparing an annual report, and conducting the annual fair, the Board provided for a Corresponding Secretary and a Recording Secretary, and allowed them to employ the necessary clerks.

In these earlier days no efforts were made to gather facts concerning crops, and present them in tabulated form; hence there were no means of affording any correct idea of the condition or prospect of farm crops or live stock, or an approximate figure of the result at the close of the respective crop seasons. If there was likely to be a short crop, and a consequent increase in price, the farmer did not know it, and the Board was unable to enlighten him; if an over-abundance of any crop, the farmer was equally ignorant considering the whole State, for he knew only that which he was able to observe in his own neighborhood, or by conversing with neighbor farmers. The only crop information given was

that published in the annual reports, and was simply remarks of a general character, long after harvest.

One of the early secretaries saw the necessity for crop reports in tabular form, for in the preface to the annual report he writes: "The reports of counties have been published as heretofore, though the main facts could be put into a tabular form and occupy but little space, and be far more convenient for reference and comparison than in its present form."

In one of the early reports the Secretary gives an abstract of the labor done in the office of the Board for one year (twelve months). He prefaces the abstract by saying: "The undersigned has labored hard to discharge as many of the duties prescribed, and others incident to the office, as he could."

The abstract forms interesting reading for comparison with the work at present, and shows as much as any thing the wonderful advancement made by the Board, and its almost inconceivable increase in office work; and that you may form a better idea of the increased work, I give you a summary of the abstract mentioned as compared with an approximate account of similar work for the year 1890:

Character of work.	From early abstract.	For 1890.
Letters written.....	561	9,125
Statistical circulars sent to counties.....	29	22,400
Certificates issued to county societies.....	40	82
Circulars and letters to committeemen as judges at the fair.....	356	200
Notices for distribution of premium lists.....	6	900
Notices with diplomas.....	50	10
Circulars of patent office sent out.....	27	.....
Circulars concerning annual meeting.....	266	2,600
Circulars concerning farmers' institutes.....	.....	7,500
Circulars concerning fertilizers.....	.....	700
Circulars concerning county exhibits.....	.....	2,000
Miscellaneous circulars.....	200	10,000
Manuscript pages of matter prepared and corrected for annual report..	800	8,000
Specimens of soils collected.....	25	.....
Printed pages of matter prepared and proof corrected for premium list	40	120
Printed pages of copy prepared and proof corrected for crop reports...	.....	240
Printed pages of copy prepared and proof corrected for bulletins.....	.....	500
Annual reports sent in packages and to individuals by express, freight and mail.....	820	5,000
Premium lists sent out.....	5,000	15,000
Crop reports sent out.....	.....	28,000
Bulletins sent out.....	.....	6,000
Packages of seed distributed.....	80	.....
State Fair posters distributed.....	2,000	17,000
Fair bulletins distributed.....	.....	50,000
Form for circulars, posters and advertisements prepared.....	40	25
Kinds of cards and tickets prepared for the fair.....	78	10
Counting the items as points, the totals are.....	10,418	178,412

From the abstract and the mention preceding it will be readily observed that the early work of the Board was entirely routine, simply the sending out and receiving of matter; and as there was no tabular work performed, there were no percentages to figure or no percentage comparisons to be made. Matter was ready for print when it was corrected and paged, while in the present times we consider the work of preparing reports only begun after the matter is received.

By percentage comparison, not figuring the immense amount of additional labor required to prepare matter for print as it is now given, there is shown an increase over earlier times in the Board of 1,700 per cent., about seventeen times as much.

No discredit is intended or should be reflected on the work of our earlier Boards; rather should they be praised for their earnest efforts in driving the entering wedges that have built up a department of State representing agriculture, that is the busiest of all State departments, its importance and influence in the agriculture of the State being felt in every township and farming community, and by every individual farmer who will but avail himself of the benefits to be derived from our work.

There were no advanced measures or material increase in the work of the Board, except that occasioned by the increase and advance, year by year, of the Ohio State fair, until the year 1879 or 1880. The Fair was the one great object to which the efforts of the Board were directed.

During most of the time up to 1880, the expense in salaries for this routine work was:

Corresponding Secretary.....	\$2,400
Recording Secretary, whose only duties were to keep the books and pre- side at the entry office during the fair... ..	600
Chief Clerk.....	\$700 to 900
Extra clerk hire.....	300
Total	\$4,200

In 1880 the Board completely revolutionized its work by the organization of Farmers' Institutes that entailed an immense amount of labor and correspondence for the Secretary. In this year was also established a system of crop reporting that made a wonderful increase in work for the entire office force, involving as it did the monthly compilation of the returns from some sixteen hundred correspondents, besides the handling of the correspondence and publications incident thereto.

The Board now in a fever for advanced work that should benefit the farmers of the State, had, in 1881, a law passed which added to its duties, or rather the duties of its Secretary, the inspection and analysis of commercial fertilizers sold in the State; and I can say to you, gentlemen, that

this particular item of work has grown until now it is in itself sufficient for any one man to be expected to perform; yet your Secretary has, by hard knocks and the closest application to the work, managed to keep it up, together with all his other duties, and by his watchfulness the farmers of Ohio are protected against a waste of money in the purchase of worthless fertilizers, and honest dealers and honest goods are also protected.

The members of the Board are quite familiar with the worry and extra labor occasioned by establishing the fair on new grounds, and which continued for a series of years.

Now let us look at the department expense in salaries for accomplishing this great increase of work:

Salary of Secretary.....	\$2,000
Salary of Assistant Secretary.....	1,500
Salary of stenographer.....	600
Salary of messenger and clerk.....	300
Total.....	\$4,400

An increase in salaries of \$200 for an increase in work of 1,700 per cent.

If the Board expended for salaries according to the amount of work performed, and figure on the basis prior to 1880, the amount for salaries would be \$61,400 instead of \$4,400, the amount now paid, not to be even dreamed of, to be sure.

Certainly there is no man who can justly charge this Board with extravagance in the payment of salaries. It is rather to be regretted that the great and important Department of Agriculture has been forced by its limited means to require of its department employes many times the amount of work required of the officers or clerks of other State departments and at decidedly less pay. Gentlemen, I venture the assertion without the least fear of successful contradiction, but with all due respect to other State officers and their work, that your Secretary performs more actual labor in six months of any year than is performed by the average State officer, either by election or appointment, in an entire year, and yet the salary of your Secretary is from \$500 to \$1000 less than is paid most of them. His salary is also less than is paid the professors in your Agricultural College or State University, yet the same years of devotion to study were required to qualify him to fill the important chair of Secretary to this Board as were required of these professors to fill their respective chairs, while as to the responsibilities between the two there is no comparison.

Without assuming to boast, the same comparison can be made between your Assistant Secretary and assistants or chief clerks to other State of-

ficers, and a corresponding result will be found. A quarter of a century as boy and man of continuous, and I fear not to say, faithful service, has furnished the study and experience that in a measure qualify him for the duties of the position.

Our lady stenographer, by far the busiest one in the State House, possesses the education and energy required for our particular work, and while acceptably filling a position well worth \$900, is receiving a salary of \$600.

The young man engaged performs the duties of messenger, janitor and ordinary clerk at a salary less than one half that which is paid the State House scrubbers.

Let me make another comparison of salary expense with one of the average State departments, the work of which my long experience teaches me cannot nearly reach the amount performed by this department. No possible stretch of the imagination could make it reach, yet for the sake of an even comparison we will assume that it does:

Salary of head of department.....	\$3,000 00
Salary of chief assistant.....	2,000 00
Salary of book-keeper.....	1,900 00
Salary of one clerk.....	1,562 50
Salary of one clerk.....	1,500 00
Salary of one clerk.....	1,400 00
Salary of one clerk.....	1,200 00
Salary of messenger.....	750 00
<hr/>	
A total of salaries paid by the department.....	\$13,250 50
Salaries paid by this department.....	4,400 00
Showing an excess in favor of the other State department.....	8,850 50

A difference of 200 per cent., or in other words, the work of the department compared, no greater than that of this department, requires three times the amount in salaries to perform it.

Now, I know, gentlemen, there is a demand among farmers and farmers' organizations for a reduction of salaries of county and State officials, but this Board is certainly outside the reach of that demand and stands as a very representative of economy in respect to expense. Its salaries are inadequate to the work performed, though it has been performed cheerfully and with hearty will, and your employes have ever been ready to add any work that was for the interest of the Board or the people, but I do not believe it is just or fair that all sacrifices should be made by the farmers or their representatives in State affairs. An equalization of salaries on a much lower basis would even increase the amounts paid by this department.

As an evidence that your work, the work of this department, is appreciated by the people, and especially those whom we more closely

represent, we have but to refer to our numerous publications of crop reports, bulletins, fertilizer reports, institute lectures, etc., and the numerous and constant application for them, not simply by individuals, but by county agricultural societies, granges, farmers' alliances, farmers' clubs and horticultural societies throughout the entire State, and by other States our work and our publications are looked upon as leaders. This Board has made broad strides in advanced work, that is counting for good to the whole people. The farmers' institutes managed by this Board and established in nearly every county of the State are, by their universal interest and large attendance, speaking in louder terms than I can express. From every institute come flattering reports of success and good accomplished, and you have the satisfaction of knowing that in this one work you are aiding to elevate and educate the farmer, and thereby not only benefit him, but every class of our citizenship.

Gentlemen, you have reason to be proud of your work as a State Board, proud of the approval you are receiving at the hands of the people, and I know I voice the sentiments of my superiors and associates in the department when I say we are harnessed for the work you may deem best for the interests you represent, and will carry it forward as you may direct to the best of our mental and physical ability. Our ambition is that this department shall stand the equal of any in importance and influence, and that its work shall compare favorably with any similar department in this broad land, and to this end, under all circumstances, shall our efforts be directed.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, *February 9, 7:30 P. M.*

The Board met pursuant to adjournment. Present: President Black, Treasurer Kling and Messrs. Miller, Pollock, Ohmer, Ely, Clark, Lewis and Bower. Absent: Mr. Hinman.

The minutes of the preceding meeting were read and approved.

The President announced the following assignment of departments for the fair of 1891:

First department—Horses.....	A. J. Clark.
Second department—Cattle.....	Geo. Lewis.
Third department—Sheep.....	J. W. Pollock.
Fourth department—Swine.....	L. G. Ely.
Fifth department—Poultry.....	L. G. Ely.
Sixth department—Farm products.....	N. Ohmer.
Seventh department—Fruit and flowers.....	N. Ohmer.

Eighth department—Machinery and implements.....	W. W. Miller.
Ninth department—Mechanics' and manufacturers' products.....	E. L. Hinman.
Tenth department—Womans' work.....	J. C. Bower.
Eleventh department—Merchandise and music	E. L. Hinman.
Twelfth department—Fine arts.....	J. C. Bower.

The President appointed the following members to constitute, with himself, the Executive Committee for the year: A. H. Kling, Treasurer; E. L. Hinman, A. J. Clark and J. W. Pollock.

Mr. Kling presented his bond as Treasurer in the sum of twenty-five thousand dollars. On motion of Mr. Ohmer, the bond of the Treasurer was accepted.

The Secretary reported that the schedule adopted at the last meeting of the Board for the issue of help tickets in the Machinery Department, was being favorably considered by other important fairs, several having already agreed to its adoption.

The Secretary and Assistant, as a committee appointed at the last meeting to prepare and submit at this meeting a schedule for help tickets in departments other than machinery, submitted the following, which was considered and adopted by departments.

MECHANICS' AND MANUFACTURERS' DEPARTMENT.

(South Annex.)

To an exhibitor of from five to ten carriages or buggies.....	1 ticket.
To an exhibitor of ten or more carriages or buggies	2 tickets.
To a still exhibit occupying satisfactorily three hundred or more square feet of space.....	1 ticket.
To an exhibit shown in operation and requiring the actual and regular attention of an operator.....	1 ticket.

FARM PRODUCTS, FRUIT AND FLORAL DEPARTMENTS.

(North Annex.)

To a county exhibit of agricultural products	2 tickets.
To a county exhibit of fruits.....	1 ticket.
To an exhibit of one hundred or more plates of fruit.....	1 ticket.
To an exhibit of growing plants occupying satisfactorily one hundred or more square feet of space.....	1 ticket.
To a dealer exhibiting garden or other seeds, occupying satisfactorily one hundred or more square feet of space.....	1 ticket.
To a representative exhibit by a farm experiment station.....	1 ticket.

AGRICULTURAL REPORT.

DEPARTMENT OF MERCHANDISE AND MUSIC.

(Main Exposition Building.)

- To still exhibits of merchandise occupying satisfactorily four hundred or more square feet of space..... 1 ticket.
- To an exhibit of pianos or organs with musician in actual and regular engagement 1 ticket.
- To an exhibit shown in operation and requiring the actual and regular attendance of an operator..... 1 ticket.

WOMANS' DEPARTMENT.

(Womans' Building.)

- To a single firm or exhibiter occupying satisfactorily, with furniture or house furnishing goods, two hundred or more square feet of space..... 1 ticket.
- To an exhibiter of millinery goods, fancy articles or ornaments, needle work, etc., either business firm or individual occupying satisfactorily one hundred or more square feet of space..... 1 ticket.
- To an exhibiter of sewing machines in operation, for each operator actually and regularly employed in operating machines..... 1 ticket.
- To an exhibiter of knitting, weaving, spinning or other household machine in actual and regular operation..... 1 ticket.
- To an exhibiter of typewriters or stenographs in actual and regular operation..... 1 ticket.
- To an exhibiter of flowers or plants occupying satisfactorily one hundred or more square feet of space..... 1 ticket.

DEPARTMENT OF ART.

(Art Building.)

- To an exhibition of paintings by an individual or business firm, occupying satisfactorily one hundred or more square feet of wall space, 1 ticket.
- To an exhibiter of engravings, prints or other pictures, occupying satisfactorily two hundred or more square feet of wall space..... 1 ticket.
- To an exhibiter of photography, occupying satisfactorily two hundred or more square feet of wall space..... 1 ticket.
- To an exhibiter of sculpture, modeling, carving, etc., in sufficient numbers or value to require personal attention..... 1 ticket.
- To an art school exhibit occupying satisfactorily two hundred or more square feet of wall space..... 1 ticket.
- To an exhibiter of architectural drawings or plans occupying satisfactorily one hundred or more square feet of wall space..... 1 ticket.
- To amateur photographers or clubs occupying satisfactorily one hundred or more square feet of wall space..... 1 ticket.

It was provided that help tickets for all the departments be issued at the Secretary's office only on the order of the members in charge of the respective departments, and within the limits of the schedule agreed upon. The provision for help tickets to apply only to those engaged in

caring for or operating exhibits, and in all cases, except where the exhibitor himself is the person engaged in caring for or operating the exhibit, the exhibitors will be required to purchase at the Secretary's office, exhibitors' tickets and these to be sold only to important exhibits at the discretion of the Secretary.

The Secretary presented a communication from a committee of the League of American Wheelmen, requesting use of fair grounds for meeting during the month of June or July.

On motion of Mr. Pollock, the communication was referred to the Secretary with power to act, and with further power to act on special attractions for the fair.

On motion of Mr. Clark, Messrs. Ohmer, Bower and the Secretary were constituted a committee to consider the feasibility of arranging a dining hall in the womans' building to be operated by the Board.

On motion of Mr. Clark, the sale of privileges for the State Fair was referred to the Secretaries.

On motion of Mr. Ohmer, it was agreed that in advertising the State Fair for this year the usual three-sheet posters be dispensed with.

Mr. Lewis moved to dispense with the usual lithographic window hanger, which motion was lost.

On motion of Mr. Kling, it was ordered that the sum of four thousand dollars be appropriated for advertising and advertising matter for the State Fair of 1891, seven hundred dollars of which to be placed in lithographic window hangers of a design to be selected and contracted for by the Secretaries.

A communication from the American Agriculturist and one from Pratt's Poultry Food Company, offering special premiums, were laid on the table.

The Hamilton County Agricultural Society requested a certificate to enable it to draw the county per capita allowance for 1890. The Secretary stated that certificate had been withheld at the annual meeting owing to the society having failed to comply with certain rules of the Board. Mr. Pollock stated that it would not be wise policy to waive the rule in favor of any society, and on his motion the Board declined to issue the certificate.

The Secretary stated that certificate had not been issued to the Jefferson County Agricultural Society, owing to a failure on the part of the society to make, in its report, an affidavit that the rules of the Board had been complied with. A communication was read from the Secretary of the Jefferson County Society, in which it was shown that members of said society had not been elected from each township, and owing to this they did not make the required affidavit. Mr. Miller cited

the rules which provided that the article bearing on the election of members of county boards did not take effect until after the fairs of 1890, and that therefore the Jefferson County Society had not in all probability violated the rule for 1890, but it was most likely they had violated the rule in their election of members for 1891 and 1892.

On motion of Mr. Miller, the Secretary was instructed to correspond with Jefferson county and if they will now so change the membership of their board as to comply with article two of the State Board rules, then the Secretary shall issue the certificate withheld for 1890.

On motion of Mr. Pollock, the invitation of the finance committee of the House of Representatives for the Board to meet that body at 1:30 p. m. Tuesday, February 10th, was accepted.

On motion, the Board proceeded to the revision of the premium list for the fair of 1891.

On motion of Mr. Kling, the sum of \$4,000 was appropriated for premiums in the speed department, and the arrangement of classes referred to the member in charge and the Assistant Secretary.

Mr. Clark moved that the American Jersey Cattle Club Register be recognized as the standard for Jersey cattle exhibited at the Ohio State Fair, which motion was lost.

On motion of Mr. Ely, the Secretary was instructed to accept any special offerings that may be made by the Shropshire Association, if received in time for the premium list and do not interfere with any of the rules for exhibition.

Adjourned to meet Tuesday morning at eight o'clock, when the Board re-assembled and proceeded with the work of revising the premium list.

A communication from a committee of the Ohio Swine Breeders' Association, relative to duplicating premiums on swine to be offered by the Columbian Exposition, was on motion of Mr. Kling, placed on file.

The following resolution was offered, and on motion of Mr. Miller, adopted:

WHEREAS, The General Assembly of the State will, in all probability, consider the matter of appropriating funds for a proper representation of Ohio's products and industries at the Columbian Exposition to be held in Chicago in 1893, therefore

Resolved, That this Board appoint a committee of three to be known as the legislative committee, for the purpose of consulting with the Governor and the members of the General Assembly in the interest of a creditable exhibition of all the industries of the State.

On motion of Mr. Pollock, President J. M. Black, E. L. Hinman and Secretary Bonham were constituted the committee.

On motion of Mr. Ely, the Secretary was directed to have re-arranged the exhibition tables in fruit hall so as to be flat and 4x12 feet top.

Recess until after meeting finance committee at 1:30 P. M.

After meeting with the committee the Board re-assembled.

On motion of Mr. Kling, the President and Secretary were authorized to sign a proper contract with the C., C., C. & St. L. R. R. in accordance with the original proposition of that road on the location of the Ohio State Fair.

On motion of Mr. Miller, the vote whereby the sale of privileges was referred to the Secretaries was reconsidered and after amending by adding the Executive Committee, was agreed to.

The Secretary read a bill proposed to be introduced in the Senate by Mr. Soncrant relative to taxing manufacturers' products. Mr. Ely offered the following resolution which was adopted:

Resolved, That the Board does most heartily indorse the principle of taxing manufacturers' products; that we do not seek exemption of farm products, and that we urge the passage of either the House bill by Mr. Rawlings, Senate bill by Mr. Soncrant, or such other bill as in the wisdom of the General Assembly will bring the products of manufacturers properly and justly on the tax duplicate.

The Secretary read a proposed bill having for its object the improvement of roads to and adjoining the fair grounds.

On motion of Mr. Kling, the Secretary was instructed to prepare a statement setting forth the necessity for such improvement, and request the Legislature to enact the proposed bill into a law.

The President appointed Messrs. Ohmer, Ely, Miller and the Secretary as the committee on Farmers' Institutes.

Adjourned to meet at the call of the President.

TUESDAY, *February* 10th—3:00 P. M.

The Executive Committee, with the Assistant Secretary, convened for the purpose of considering the sale of privileges for the State Fair.

It was agreed that the manner of selling privileges be the same as last year. It was also agreed to continue the percentage allowed of admission tickets to purchasers, with this provision; purchasers of privileges amounting to \$200 or less, 10 per cent. of purchase money in single admission tickets. Purchasers of privileges amounting to more than \$200, five per cent. in tickets.

Adjourned.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, *May 28th*—10 o'clock A. M.

The Board met pursuant to the call of the President. President Black in the chair and the following members present: Messrs. Kling, Clark, Hinman, Ely, Lewis, Ohmer, Pollock and Bower.

The minutes of the preceding meeting were read and approved.

Mr. Hinman and the Secretary, as committee appointed to contract for painting buildings on the fair grounds, reported progress of the work, and on motion of Mr. Kling, the committee was authorized to modify the contract, if thought necessary, so as to provide for two coats of paint on the womans' building, instead of one as originally contracted.

The Secretary reported the bids received for constructing a gate-way at the south middle entrance to the grounds, and the committee formerly appointed to secure plans were instructed to contract with J. W. Young at his proposal of \$810.50.

The Secretary reported the appropriations made by the General Assembly for the redemption of bonds and payment of interest, stating that from the appropriation the Centennial bonds had been redeemed and that mortgage canceled, and that \$15,000 of the regular mortgage bonds due July 1st, 1891, would be taken up.

On motion of Mr. Ely, supplemented by Mr. Ohmer, the matter of purchasing a team and wagon and the selling of one horse now owned by the Board, was referred to Mr. Clark and the Secretary, with authority to act.

On motion of Mr. Pollock, the matter of police arrangement for the fair of 1891 was referred to Mr. Hinman and the Secretary.

On motion of Mr. Kling, the engagement of bands for the fair was referred to the Secretaries, provision being made that the price to be paid and the number engaged shall not exceed last year.

On motion of Mr. Ohmer, the pay of superintendents was fixed at \$4.00 per day, and that of assistant superintendents at \$3.00 per day, they to pay their own expenses.

On motion of Mr. Kling, Mr. Hinman and the Secretary were authorized to arrange for the construction of a hay shed of about 60 tons capacity.

On motion of Mr. Lewis, the Secretary was instructed to advertise for the necessary amount of straw for bedding and to contract with the lowest responsible bidder; at the opening of the fair all stalls and pens to be filled with loose straw, and thereafter the straw to be furnished in bales, provided this plan is found feasible.

On motion of Mr. Kling, the Secretary was instructed to arrange with

a responsible party for furnishing hay and feed on the grounds at market prices.

On motion of Mr. Kling, the Secretary was instructed to have fitted up for a feed department the log cabin on main road near north gate.

On motion of Mr. Kling, the superintendent was directed to dress up the grounds and walks about the house occupied by him, and to have the house painted.

On motion of Mr. Kling, the expert judges to be appointed shall receive \$5 per day for the time actually engaged in judging, to which shall be added their traveling expenses.

On motion of Mr. Kling, amended by Mr. Ely, Friday, September 18, was designated as school children's day at the Ohio State Fair, on which day, under proper regulations, children under fifteen years of age, of the public and parochial schools of the State, will be admitted to the Exposition free of charge.

The propriety of offering prizes for an exhibition and drill by the Sons of Veterans was referred to the Executive Committee with power to expend not to exceed the sum of \$225.00.

Recess until 2 o'clock P. M., at which hour the Board reconvened and proceeded to the appointment of expert judges, the following selections being made:

HORSES.

Thoroughbreds, Book 1; Roadsters, Book 2; Standard Bred, Book 8; Ponies, Book 11—V. D. Craig, Washington, O.

Coach Horses, Book 3; Geldings and Mares for light harness, Book 7; Matched Horses, Book 10—B. I. Jones, Granville, O.

Saddlers, Book 9—Judge to be named by member in charge.

English Draft, Book 4; Grade Draft, Book 6—T. A. Johnson, Antrim, O.

French Draft, Book 5—J. W. Edwards, Waynesville, O.

Sweepstakes, Coachers, Book 12; Sweepstakes, Roadsters, Book 15—B. W. Kent Marion, O.

Sweepstakes, English Draft, Book 13—Andrew Jackson, Cedarville, O.

Sweepstakes, French Draft, Book 14—John W. Graves, Cambridge, O.

Speed Classes—Andrew Jackson, Cedarville, O., Starter; V. D. Craig, Washington, O., Judge; J. W. Edwards, Waynesville, O., Judge; B. I. Jones, Granville, O., Judge.

CATTLE.

Shorthorns, Book 16; Polled Durhams, Book 23—Wm. Warfield, Lexington, Ky. Devon, Book 17; Ayrshires, Book 20; Holsteins, Book 20—L. P. Sisson, Wheeling, W. Va.

Jerseys, Book 19—Capt. J. C. Therley, Anchorage, Ky.

Fat Cattle, Book 25—R. Baker, Elyria, O.

Milch Test, Book 24—J. F. Hickman, Columbus, O.; B. B. Herrick, Wellington, O.

SHEEP.

Merinoes, Book 26; Delaine Merinoes, Book 27—J. D. Irwin, Ada, O.
 Long Wools, Book 28—J. W. Savage, Elyria, O.
 Down Classes, Books 29, 30 and 31—W. N. Cowden, Quaker City, O.
 Sweepstakes Fine Wools, Book 32—W. N. Cowden, Quaker City, O.
 Sweepstakes Long Wools, Book 33; Downs, Books 34, 35 and 36—James A. Crawford, Xenia, O.; J. W. Savage, Elyria, O.; B. Cusick, Marion, O.
 Fat Sheep, Book 37—J. W. Savage, Elyria, O.

SWINE.

Berkshires, Book 38; Essex, Book 42; Duroc Jersey, Book 43—I. N. Barker, Throntown, Ind.
 Poland Chinas, Book 39; Chester Whites, Book 40; Suffolks, Book 41—W. C. Hankinson, Blue Ball, O.
 Sweepstakes, Book 44; Breeders' Ring, Book 45—Clarence Betts, Stryker, O.; G. F. Jobe, Xenia, O.; H. S. Persing, West Unity, O.

FARM PRODUCTS.

Grain and Seeds, Book 47; Corn, etc., Book 48—D. W. H. Howard, Wauseon, O.
 Potatoes, Book 50; Vegetables, Book 51—F. E. Blake, Marion, O.
 Cheese and Butter, Book 49—B. B. Herrick, Wellington, O.
 Bees and Honey, Book 53—A. B. Mason, Auburndale, O.
 County exhibits to be passed upon by a committee from the above.

FRUITS.

Apples—Geo. W. Trowbridge, Glendale, O.
 Pears, Peaches, Quinces and Plums—J. H. Tryon, Willoughby, O.
 Grapes—George W. Campbell, Delaware, O.
 County fruits to be passed upon by above named judges as a committee

PLANTS AND FLOWERS.

Plants—Frank Pentland, Lockland, O.
 Cut Flowers—B. F. Seitner, Dayton, O.

WOMAN'S DEPARTMENT.

Needlework and Embroidery—Mrs. T. H. Beale, Marion, O.
 Art Needlework—Mrs. Willis Fulton, Newark, O.
 China Painting, etc.—
 Preserves, Pickles, etc.—Mrs. John Kishler, Marion, O.
 Plants and Flowers—Frank Pentland, Lockland, O.

Attest:

L. N. BONHAM, *Secretary.*

The Board adjourned to meet at the call of the President.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, FRIDAY EVENING, *September 11, 1891.*

The Board met pursuant to call, President Black in the Chair. There were present Messrs. Ely, Ohmer, Lewis, Bower, Miller, Clark and Pollock.

The minutes of the preceding meeting were read and approved.

The Secretary reported that the painting contract of Mr. Crane, referred to Mr. Hinman and the Secretary, had been complied with fully, the work satisfactory and the bill paid.

The Secretary also reported the completion of central entrance gate and ticket offices as per plans, the construction of board walk from south annex to Woman's building, and the erection of portico on the east of Central building.

On motion of Mr. Ohmer, the action of Mr. Hinman and the Secretary in the above improvements was approved.

The action of Mr. Clark and the Secretary in the purchase of a team and wagon for the fair grounds was approved.

The action of the Secretary in engaging special bands for open air concerts on the grounds as a special attraction that could be advertised in lieu of the proposed parade by the Sons of Veterans was indorsed.

The Secretary reported that he had arranged with the gubernatorial candidates to speak at the fair grounds as follows:

Tuesday, September 15, Prohibition candidate, J. J. Ashenhurst as orator, Dr. W. W. Thompson to preside.

Wednesday, September 16, Democratic candidate, Gov. James E. Campbell as orator, Hon J. H. Outhwaite to preside.

Thursday, September 17, Republican candidate, Hon. W. McKinley, was unable to leave other engagements, and Hon. John Sherman accepted invitation to make the address with State Auditor Poe to preside.

Friday, September 18, Hon. John Seitz, candidate of the People's party as orator, with W. H. Likins to preside.

Each day the speaker and President of the Day to be escorted from the Neil House to the fair grounds by President Black.

The plans and arrangements were approved. The Secretary reported that Capt. Therley, of Kentucky who had been appointed expert on Jersey cattle, could not be present, when on motion of Mr. Lewis, the Secretary was instructed to telegraph Mr. Lewis Brush, of Buffalo, N. Y., and if he could not serve, to telegraph other parties.

On motion, complimentary tickets were ordered sent to Police Com-

missioners of Columbus, and to the Superintendent, Captain and Directors of the Columbus police force.

On motion of Mr. Clark, the police headquarters were made at the old live stock headquarters instead of at the tool house as heretofore.

On motion of Mr. Miller, it was ordered that single admission tickets be sold in quantities at half rate to manufacturers for their employes, where the factory or works are closed; the number of tickets so sold to manufacturers to be limited to the number of their employes and members of the firm.

The Secretary reported that he had let the contract for straw at \$3.95 per ton baled or loose at Board's option, and that Hocking Valley lump coal, to be delivered as required, had been contracted for at \$2.15 per ton.

The correspondence of the Page Woven Wire Fence Co., of Adrian, Michigan, in reference to test of fences, was referred to Mr. Miller, member in charge of the machinery department.

The Assistant Secretary explained the use of the different admission tickets for the fair of this year.

A communication was read from Mr. J. McLain Smith suggesting a plan for a milk test for the coming year, which was ordered filed for future consideration. On motion of Mr. Lewis, a committee to consist of the President and Secretary was appointed to formulate plans for a milk test in line with the suggestions of Mr. Smith, and present at the next meeting of the Board.

In the matter of a fixed schedule for issuing help tickets, the Secretary reported he had submitted the schedule adopted for use at the Ohio Fair to the fair associations of West Virginia, Indiana, Illinois, St. Louis, Detroit and Toledo, and received letters from the several secretaries approving the system, except Detroit.

Adjourned to meet Monday evening, September 14.

MONDAY EVENING, *September 14*,—8 o'clock.

Board met with President Black in the Chair. Present Messrs. Ely, Lewis, Clark, Pollock, Kling, Ohmer and Bower.

On motion of Mr. Ely, a committee consisting of the President, Treasurer and Secretary was appointed to effect settlement of the claim of the Board against the C., C., C. & St. L. Railway, and to execute contract in harmony with the agreements made between said railway and the State Board.

Mr. Lewis presented a paper signed by twenty-four exhibitors, protesting against the quality of feed furnished and prices charged by the firm having the privilege to sell feed on the grounds. A committee, consisting of Messrs. Lewis, Clark, Pollock and Ely were appointed to investigate the matter, and if the complaint be well founded to notify Messrs. Simpson and Hughes that they are not filling their contract and the Board claims the right to permit exhibitors to purchase feed from other parties. The committee was further authorized to act as in their judgment the case demands.

Mr. Ohmer presented a letter from Miss Jennie Coder, of Marysville, Ohio, informing him that she could not ship her exhibit of plants so as to arrive at fair grounds prior to Tuesday morning. She desired until Tuesday, 10 o'clock, A. M., to have plants in place. Mr. Ohmer was granted power to act as in his judgment the case demanded. Mr. Ohmer also reported that the fruit exhibit so far exceeded any show ever made in the State—that there was need of eight hundred more plates. He was authorized to borrow or purchase that number or so many as might be needed to accommodate the exhibit.

Messrs. Norton and Bell, representing exhibitors of Duroc Jersey swine, met the Board and stated that the exhibit of red swine was greater than that of Chester Whites and asked that they be allowed to exhibit for sweepstakes the same as other breeds. The request was granted.

On motion of Mr. Lewis, the cattle of David Alban were allowed to compete, letter making entries being written in time, but delayed in mailing.

Adjourned to meet at call of President.

WEDNESDAY EVENING, *September 16.*

Board met with President Black in the Chair. Messrs. Ohmer, Clark, Ely, Kling, Pollock, Bower and Lewis present.

A committee of machinery exhibitors appeared before the Board to cite their objections to the system of identification tickets for the admission of exhibitors and helpers. A frank and friendly discussion was had of the matter, the Board explaining fully the objects of the system and its desire to amply accommodate exhibitors and helpers and facilitate their business on the grounds. On motion of Mr. Kling, the President, Secretary and the member in charge of the machinery department were constituted a committee with power to act, and invite a conference with a committee of three, representing the exhibitors. Said joint committee to meet at the Agricultural Department to further consider the ticket.

schedule as adopted by the Board, and mutually agree upon the number of helpers' tickets that should be allowed for each class of exhibits.

On motion of Mr. Ohmer, President Black and Mr. Miller were constituted a committee to visit exhibitors in all the departments to learn if any changes are necessary in help-ticket allowance for the harmonious and satisfactory working of the system.

Adjourned to meet at call of President.

STATE AGRICULTURAL DEPARTMENT,

TUESDAY, *October 13*—8 o'clock A. M.

The Board met pursuant to call, President Black in the Chair. There were present Messrs. Ohmer, Ely, Pollock, Lewis, Bower, Kling and Clark.

The minutes of the preceding meeting were read and approved.

The President called for reports of committees on fair business.

Mr. Lewis, from committee on feed, reported that he had investigated during the fair the complaint filed against the quality and price of feed for stock that was furnished by the parties having the privilege, and that the matter was satisfactorily adjusted.

Mr. Miller, from committee to visit departments during the fair, and ascertain if any changes were necessary in the schedule of allowance for help tickets, reported that he had found exhibitors very generally amply supplied and satisfied with the system of help and exhibitors' tickets, and his conclusions were that the Board had been very liberal to exhibitors. In accordance with the action of the Board at a meeting during the fair, Mr. Miller suggested to machinery exhibitors that they appoint from their numbers a committee of three to meet the committee of like number from this Board, for the purpose of considering the ticket system; but as no such committee was appointed on the part of exhibitors, his inference was that they were satisfied and had no improvements to suggest.

The committee on milk tests made report, suggesting that milk tests, as recommended at a former meeting, be made in connection with the Ohio Experimental Station, and that a fixed plan be prepared. The committee was continued for this purpose.

Mr. Ohmer reported relative to floral exhibit in which Miss Jennie Coder of Marysville, Ohio, was claimed to be a professional grower, while showing in the amateur class, and protest had been intimated by another exhibitor. He found no ground for the claim, and recommended the payment of any premiums awarded.

The Secretary read communications from Mrs. A. H. Morey relative to exhibits in the woman's department that through clerical error had been entered out of class and failed to compete. In consideration of the numerous articles exhibited by Mrs. Morey, it was, on motion of Mr. Kling, agreed that a special premium of five dollars be awarded.

A petition recommending Clinton Orcutt for superintendent of grounds was read, and, on motion of Mr. Kling, placed on file.

A statement was presented by the Treasurer, showing receipts and disbursements of the Board from beginning of year to October 1, 1891.

The committee appointed at the last annual Farmers' and Breeders' Convention, to confer with the Board relative to the opening of breeders' stakes at the annual State fairs, submitted a list of trotting stakes which they would recommend for the coming year. On motion of Mr. Kling, the list was adopted and ordered printed, the Secretaries also instructed to advertise the stakes in the horse journals.

On motion of Mr. Lewis, Treasurer Kling, Mr. Hinman and the Secretary were constituted a permanent committee on improvements, with power to act.

The following improvements on the grounds were suggested as necessary, and referred to the committee:

- The construction of drinking fountains.
- Erection of additional closets.
- Water in grand stand booths.
- Water drop at cattle department.
- Macadamized road at central entrance.
- Widen road east of central building.
- Roads about woman's building.
- Improve and enlarge Treasurer's office.
- Floor power hall and construct an office.
- Enlarge south ticket office at grand stand.
- Show cases for woman's department.

On motion of Mr. Miller, all improvements to be subject to the general approval of the Board.

The Secretary was instructed to present to President Ingalls, of the C., C., C. & St. L. R. R., the claim against said road on account of State Fair location.

On motion of Mr. Kling, the Secretary was instructed to sell one of the State Fair ground horses.

Recess for dinner.

AFTERNOON SESSION.

On motion of Mr. Kling, it was agreed that the Board attend the fat stock show at Chicago, and meet at the Grand Pacific Hotel on Tuesday, November 17, 1891.

On motion, adjourned to meet at the call of the President.

GRAND PACIFIC HOTEL,

CHICAGO, ILL., November 18, 1891.

The Board convened at the call of the President, and by previous agreement to meet at the national fat stock show and breeders' meetings held at Chicago. There were present President Black and Messrs. Kling, Ohmer, Bower, Clark, Pollock and Lewis.

The Secretary read the following communication from Mr. Ely:

WEST UNION, O., November 16, 1891.

To the Honorable The Ohio State Board of Agriculture:

GENTLEMEN: Agreeably with the requirements of the Statutes of Ohio, I hereby tender my resignation as a member of the Ohio State Board of Agriculture. In so doing I desire to extend to the Board, collectively and individually, including the worthy secretary and his assistant, and also the attaches of their office, my heartfelt thanks for the universal kind treatment that I have received from you all. I may add that no duty or action caused by my election to the Ohio House of Representatives brings more regrets on my part than that of withdrawing from the State Board of Agriculture.

Yours most truly,

L. G. ELY.

After remarks by the members, expressive of good will for Mr. Ely, and in appreciation of his services as a member of the Board, the resignation was held for final action at next meeting.

The Secretary, from the committee appointed at a former meeting to submit a plan for milk tests, reported the following, which, on motion of Mr. Ohmer, was adopted:

TEST OF MILK COWS.

TO BE MADE UNDER THE AUSPICES OF THE OHIO STATE BOARD OF AGRICULTURE AND THE OHIO AGRICULTURAL EXPERIMENT STATION.

Two objections seem to hold against the common method of testing cows at fairs.

First. That under the excitement of removal from customary quarters and from change of feed and surroundings, the flow of milk is not normal, and the test made under these unfavorable conditions does not show the real capacity of the cow as a milk producer.

Second. That comparatively few cows are in full flow of milk at the time of holding the fair.

To obviate these objections and to secure tests and records, which will be of permanent value in estimating the greatest worth of the several breeds as milk producers, and to show the relative cost of production of milk, the Ohio State Board of Agriculture has invited the Director of the Ohio Experiment Station to unite with it in carrying out the following—

PLAN FOR A MILK TEST.

First. Any owner desiring to enter a cow for test shall notify the Secretary of the fact and state when he desires the test to be made, and shall accompany his request with

five per cent. of the first premium for each animal entered and for each class in which he enters, except for the sweepstakes medal.

Second. Only animals entered in both the cash prize classes are eligible to enter for the sweepstakes medal.

Third. In addition to the five per cent. entrance fee the sum of five dollars (\$5) must also accompany the entries made by each person, which sum is to pay the traveling expenses from Columbus and return, of the person appointed by the State Board of Agriculture to make the test. The test will be made within one week after the entries have been received.

Fourth. The test to be limited to cows in Ohio and registered in their appropriate record. Each entry will be entitled to two trials if desired by the owner, he to pay, each time, the five dollars for traveling expenses of the tester, but no per diem, and the highest of the two tests to be taken as the basis of the award.

Fifth. Entries and tests may be made at any time prior to September 1, 1892, but all cows entered for the test must be exhibited at the Ohio State Fair of 1892 when the awards will be made. No award will be made to any owner whose cow is not present during the fair, unless, in the meantime, the cow has died, or contracted some contagious disease.

Sixth. Change of ownership of cow not to affect the award, provided all other conditions are complied with.

Seventh. Tests will be made, so far as practicable, by the same tester selected from the employes of the Ohio Agricultural Experiment Station, who will seal the sample of milk as soon as drawn and deliver the same to the chemist at the Station, together with the name, age and breed of the cow, and the name and P. O. address of the owner. The chemist will make the analysis, keep record of the same and prepare report to appear in the reports of both the Station and the State Board of Agriculture.

Eighth. Cows entered for the test may be fed at the discretion of the owner, but he shall file with the Secretary of the State Board of Agriculture, before the result of analysis will be made known, an affidavit that, during the test and for two weeks prior thereto, no drugs or condiments were fed, nor any thing but water given to drink.

PRIZES.

For largest yield of fat from (24) twenty-four hours milk, taken at six o'clock A. M. and six o'clock P. M. of same day and determined by chemical analysis of samples taken by the tester from the Experiment Station, the cow having been milked out clean by the tester the evening before the test—

First prize \$100

Second prize..... 50

For largest yield of solids, not including fat—

First prize..... \$50

Second prize..... 25

To the cow showing the most milk, most fat and most solids, Sweepstakes prize, Silver Medal, in addition to any other prize or prizes she may have taken.

On motion of Mr. Kling, it was agreed that when an adjournment is taken it be to meet at the call of the President some time prior to the annual meeting, for the purpose of revising the premium list for the State Fair of 1892 and the transaction of such other business as may come before the Board.

On motion of Mr. Bower, it was agreed that the Board, during its meetings at Columbus, stop at the Neil House.

On motion of Mr. Pollock, the President, Secretary, Mr. Kling and Mr. Hinman were constituted a committee to confer with the Columbus Board of Trade relative to attractions during the State Fair week.

The President appointed Messrs. Clark, Ohmer and Hinman as the auditing committee for the accounts of the year.

On motion, adjourned.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, O., *December 22, 1891—8 A. M.*

The Board met pursuant to call of the President, and was called to order by President J. M. Black. There was present the full membership.

The Secretary read the minutes of the last two preceding meetings, which were approved.

Mr. A. H. Kling presented his annual report as the Treasurer of the Board, which report was approved and ordered to be read before the Annual Agricultural Convention and incorporated in the proceedings of that body. Similar action was taken on the report submitted by the Auditing Committee.

The committee on fair ground improvements made report on the progress of work, which report was approved and the committee continued.

On motion of Mr. Miller, the improvement committee was instructed to purchase and have set up on the fair grounds five drinking fountains, one fountain to be with statue and located south of Woman's building, and four fountains without statue to be located by the committee.

The Secretary read the following:

MARION, O., *December 1, 1891.*

This is to certify that I was Awarding Judge at Ohio State Fair, 1891, on Shropshire Sheep Sweepstakes. I awarded to E. S. Butler & Sons, Ridgeway, O., a special prize offered by the American Shropshire Registry Association for a flock of five lambs (three ewes and two rams).

Signed:

B. CUSHICK.

On motion of Mr. Kling, the Secretary was instructed to issue to E. S. Butler & Sons a certificate to that effect.

The dates agreed upon for the Ohio State Fair and Industrial Exposition of 1892 were September 12, 13, 14, 15 and 16, they being in harmony with dates agreed upon for the circuit of fairs.

On motion of Mr. Miller, the price of exhibitors' tickets for 1892 was fixed at two dollars, and to be the kind known as identification tickets.

A petition signed by twenty-five breeders of standard trotters was read, asking that exhibitors of standard-bred horses be required to furnish with each entry a certificate from the Registry Association that the horse is properly registered.

On motion, the petition was granted and the order so made.

The Secretary was instructed to formulate a rule to appear in the premium list forbidding an exhibitor from calling attention to his exhibit by means of outcry, singing, bands, or any other means tending to confusion or noise.

Recess until 2 o'clock P. M., at which hour the Board re-assembled.

In answer to a message sent by the Secretary last evening, requesting Mr. H. H. Poppleton, attorney for the C., C., C. & St. L. Ry., to meet the members of Ohio State Board of Agriculture, Wednesday, December 23, that the contract pending between the Board of Agriculture and said railway company could be closed, a dispatch from Mr. Poppleton was read, saying he regretted that he was not able to come to Columbus because of severe sickness in his family.

The Secretary presented a request from the Messrs. McLaughlin, of Columbus, that they be permitted to erect on the fair grounds a neat, painted frame building for an office and sleeping room. The request was granted, and the Secretary instructed to prepare conditions and fix location of building.

On motion, the Board proceeded to a revision of the premium list for the fair of 1892.

The horse department was referred to a committee consisting of Messrs. Clark, Kling, Bower and the Secretaries, with instructions to report at the next meeting.

The sum of \$4,300 was agreed upon for speed premiums and the arrangement of classes referred to the Secretaries.

The revision of the poultry department was referred to the Secretary, with instructions to call to his aid Mr. O. G. Miller, of Mt. Gilead, the superintendent of poultry at the last fair.

On motion of Mr. Kling, the President, Secretary and Mr. Pollock, were appointed a committee to revise the classification of sheep and report at this meeting.

Mr. Ohmer offered a new classification for the fruit and the farm product departments, increasing the amount of premiums offered about five hundred dollars. The classifications submitted were adopted.

The committee on revision of sheep classification reported, recom-

mending an increase of one hundred and seventy dollars for new classes, which recommendations were adopted.

The resignation of Mr. Ely, presented at the Chicago meeting, November 18, was accepted and the following resolution adopted:

Resolved, That while we extend to our friend and fellow-member, Hon. L. G. Ely, our hearty congratulations on his election to the Ohio House of Representatives, we would also express our regrets in parting with him as an esteemed member of the Board of Agriculture, and bear testimony to his high character as a man, and faithful service as member of this Board.

On motion, the Board adjourned, to meet Monday evening, January 11th.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, January 12, 1892—4 o'clock P. M.,

The Board met pursuant to call, President Black in the Chair. The minutes of the preceding meeting were read and approved.

The committee appointed at the last meeting to revise the classes in the horse department, made a report recommending the offering of premiums for the now prominent recognized breeds, not included in last year's list. On motion of Mr. Pollock, it was agreed that in the grade classes for draft and coach horses, as reported by the committee, geldings and mares be required to compete together. With this amendment, the classes as reported by the committee were adopted.

The committee appointed to revise premiums in the woman's department not being ready to report, was continued with power to act.

It was agreed to provide coops in which to place fowls while being scored by the expert judge.

The special prizes offered by the American Hereford Cattle Breeders' Association were accepted and ordered to be incorporated in the premium list for 1892.

On motion, the Board adjourned *sine die*.

Attest:

L. N. BONHAM, *Secretary*.

STATE AGRICULTURAL DEPARTMENT,

COLUMBUS, THURSDAY, 9 o'clock P. M.

The State Board of Agriculture for 1892, consisting of A. H. Kling, Marion, Marion county; A. J. Clark, Cambridge, Guernsey county; W.

W. Miller, Castalia, Erie county; J. C. Bower, Athens, Athens county; J. W. Pollock, Cedarville, Greene county; N. Ohmer, Dayton, Montgomery county; E. L. Hinman, Columbus, Franklin county; Chester Bordwell, Batavia, Clermont county; and F. A. Derthick, Mantua, Portage county. organised by the election of the following officers:

A. H. Kling, President.

W. W. Miller, Treasurer.

L. N. Bonham, Secretary.

J. W. Fleming, Assistant Secretary.

PROCEEDINGS
OF THE
FORTY-SEVENTH ANNUAL SESSION
OF THE
OHIO STATE AGRICULTURAL CONVENTION,
HELD IN THE
SENATE CHAMBER, AT THE CITY OF COLUMBUS,
THURSDAY, JANUARY 14, 1892.

The Annual Agricultural Convention, which assembled as per announcement, in the Senate Chamber, was called to order by President J. M. Black, at 10 A. M., and led in prayer by President Thompson of Miami University.

Afterwards the Chair announced that the next thing in order was the roll call by counties.

Secretary Bonham: Gentleman, I will call the roll, and request, as your county is called, that the delegate will come forward and hand in his report, and give us his name, so that the name can be entered upon our list. Whether you have handed in your report or not, we desire that you should come forward and give us your name, so that we may have a correct list of delegates.

Secretary Bonham then called the roll by counties, Assistant Secretary Fleming recording the names of delegates, and receiving reports submitted.

The following is the result of the roll-call:

LIST OF DELEGATES TO THE CONVENTION.

Counties.	Names.	Post-office address.
Allen	L. L. Helser	Herring.
Ashtabula	B. A. French	Lenox.
Auglaize	J. A. Wurst	Wapakoneta.
Belmont	J. B. Hoge	St. Clairsville.
Brown	F. W. Dunham	Georgetown.
Butler	C. Rothenbush	Hamilton.
Carroll	Geo. Bothwell	Carrollton.
Champaign	C. F. Ganson	Urbana.
Clark	D. O. France	Springfield.
Clermont	R. D. Sapp	Baldwin.
Columbiana	T. C. Lindesmith	Dungannon.
Coshocton	A. M. Dinsmore	Coshocton.
Crawford	J. H. Kellar	Bucyrus.
Cuyahoga	Tryon Bailey	Chagrin Falls.
Darke	J. M. Brown	De Lisle.
Erie	Chas. L. House	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster.
Fulton	L. G. Ely	Wauseon.
Geauga	F. S. Morris	Chardon.
Hamilton	Albert French	Cincinnati.
Hancock	A. Fulhart	Findlay.
Hardin	J. B. Pumphrey	Kenton.
Harrison	E. B. McNamee	Cadiz.
Hooking	Henry Trimmer	Logan.
Holmes	J. A. McDowell	M. Ilersburg.
Huron	J. L. Paul	Norwalk.
Knox	J. C. Gordon	Mt. Vernon.
Lake	B. A. Park	Painesville.
Licking	Andrew Beard	Jacksontown.
Logan	H. A. Hill	West Liberty.
Lorain	R. Baker	Elyria.
Lucas	Thos. Crofts	East Toledo.
Madison	G. W. Wil-on	London.
Mahoning	J. H. Ruhlman	North Lima.
Marion	G. W. Walters	Marion.
Medina	A. R. Clapp	Medina.
Meigs	B. F. Knight	Chester.
Miami	W. I. Kiser	Piqua.
Montgomery	Geo. W. Knecht	Dayton.
Morgan	A. D. King	McConnelsville.
Morrow	R. P. Miller	Mt. Gilead.
Muskingum	M. R. McClelland	Chandlersville.
Ottawa	G. W. Sloan	Port Clinton.
Perry	Joseph Cunningham	New Lexington.
Preble	J. G. Oxer	Campbelltown.
Putnam	I. H. Kahle	Glendorf.
Richland	M. Carter	Mansfield.
Ross	W. K. Thompson	Chillicothe.
Sandusky	B. B. Overmyer	Lindsay.
Scioto	A. T. Holson	Portsmouth.
Seneca	J. C. Robinson	Rockaway.
Shelby	G. C. Anderson	Sidney.
Stark	W. H. Ewig	Canton.
Summit	W. C. Sackett	Akron.
Tuscarawas	Ed. Slingluff	New Philadelphia.
Union	M. Hopkins	Marysville.
Van Wert	W. C. Brooks	Van Wert.
Warren	Samuel Irons	Lebanon.
Washington	Wm. McGill	Veto.
Wayne	I. N. Kinney	Wooster.

The Chair: As the roll-call is now concluded, what next is the pleasure of the Convention?

Mr. Foster, of Champaign county: Mr. President, I move now, sir, that the Sergeant-at-Arms of the Senate be requested to act as Sergeant-at-Arms during the sessions of this Convention.

The motion, being seconded, was carried.

Secretary Bonham then requested all delegates to submit their railroad certificates so that they can be signed up and countersigned, that all may avail themselves of the reduced rates accorded by the various railroad companies having lines entering the city.

President Black: The next thing in order on the program was an address from our Governor, but he is engaged this morning and asked to be excused for the present, promising that he will come up some time during the day, if possible; so that we will now pass to what few remarks I may have to say to you this morning.

President J. M. Black then read the following address to the Convention:

GENTLEMEN OF THE CONVENTION: I desire to congratulate you upon being citizens and agriculturists of the great commonwealth of Ohio.

I desire to congratulate you upon the favorable consideration you have received from our State officers and the General Assembly during the past year.

I desire to congratulate you that the day has been relegated to the past when the agriculturist pleads in vain for his just right at the doors of our congressional and legislative halls.

I congratulate you upon the privilege of assembling here again after the close of a year in which the God of harvests has rewarded the labor of the husbandman with abundant crops.

I congratulate you upon the existence of those commercial and economic conditions affording a demand commensurate with our abundance.

It having become my duty as the presiding officer of the State Board of Agriculture to address you at this time, I congratulate myself that this duty comes after we have finished the account of a State Fair whose displays and receipts have never been more satisfactory in Ohio's history.

Concerning the permanent location of the State Fair on State grounds, the members of the Convention and people of Ohio are quite familiar; but a reference to some matters connected therewith may be of interest at this time. The purchase of land was begun in 1883, the last parcel to make the grounds complete being secured in 1885.

The total amount of land purchased and improved for fair grounds is ninety acres and a fraction, the total cost for same being \$34,994, an average of about \$388 per acre. The purchases made in 1883 were in the name of W. N. Cowden and L. B. Harris, as trustees in trust for the Ohio State Board of Agriculture, so purchased pending the enactment of a law that should authorize the Board to purchase and hold real estate. The General Assembly on March 25, 1884, enacted such a law, and the parcels of land purchased thereafter were deeded directly to the Board, as were also previous purchases made by the Trustees.

Having secured grounds with its own funds, one of the first acts of the Board was a request to the General Assembly to make them State property, devoted to the purposes of the annual State fairs; and in accordance with the Board's wishes such a bill was passed and became a law May 4, 1885. The same year the General Assembly, by enact-

ment, authorized the Board to mortgage these grounds and to issue bonds, the proceeds from the sale of which being devoted to the erection of buildings and fitting the grounds preparatory to the holding of a fair. The amount realized by sale of bonds being insufficient to equip the grounds, and the importance of the undertaking being realized and appreciated by the General Assembly, further necessary aid was extended the Board by State appropriations. The work of fencing, grading, tree-planting, park embellishments and erection of buildings was pushed as rapidly as possible, and on Aug. 30, 1886, began the first State Fair on the new grounds.

Since that time the work of improving the grounds and erecting new buildings has been carried forward as rapidly as the means of the Board would warrant, and it is no idle boast to say that to-day the Ohio Fair grounds and exhibition buildings are the finest and best in the Union. A few facts relative to the value of the grounds will tend to show that in the purchase the Board builded for the State even more wisely than is thought. Up to the present time there has been expended for purchase of land, \$34,994.70, buildings and improvements, \$220,206.76, showing the cost value to be \$255,201.46; but we must go a step further to ascertain the real value of this property, brought into the possession of the State through the efforts of the Board of Agriculture. The original rough and swampy grounds have been drained, graded and beautified, making them even more valuable than surrounding property, figuring from a simply real estate point of view.

Since the purchase of these grounds real estate values in the locality have steadily increased, and \$2,000 per acre would be a very moderate price for the land that cost \$388 per acre; in fact, acreage is not for sale in the locality. Lands have been subdivided and platted, and are for sale only by the lot and front foot. The State has gained by the increase in value in real estate about \$145,000, and this increase value added to the cost value shows a real property value of \$400,000, against which at the present time there is but \$65,000 of mortgage indebtedness.

The State Board of Agriculture, and especially its highly efficient Secretaries, certainly have great reasons to congratulate themselves upon the judicious investment of the funds intrusted to their keeping. The report of the Treasurer will give a detailed account of the financial transactions for the year, and the general financial condition of the Board.

Your attention is called to the unpaid premiums and prizes offered by the Centennial Board of Directors, of which the Governor was the presiding officer, under the joint resolution which passed March 12, 1886. This resolution gave the use of the State Fair grounds and buildings to the Centennial Board, and gave it "control of all business connected with the preparation and holding of the Centennial Exposition, and power to establish rules and regulations for the government of the various departments connected therewith, and making such rules and extending such encouragement to exhibitors as should secure intelligent representation in the various departments."

Under the authority thus conferred the Board offered a line of premiums, which, owing to a long run of rainy cold weather, it was not able to pay in full, leaving a balance of about \$8,000. This amount is due about 400 exhibitors resident in Ohio and adjoining States.

This unpaid debt of the Centennial Board is a detriment to the State Board of Agriculture, and it should be relieved, and the honor of the State protected. The premiums were authorized and were reasonable, and the exhibitors brought their exhibits in good faith and at great expense, helping to make the Centennial Exposition of 1888 worthy of the State.

The institute work was inaugurated by the State Board of Agriculture in the year 1880, by making an appropriation of \$1,000 out of its own earnings to carry forward the work. The first year forty-eight institutes were held, the second fifty-six, and the number was never above eighty until the centennial year, when a special effort was made and an even hundred was numbered. Since that time the number has advanced to 140-

In the State of Wisconsin \$12,000 are appropriated for the support of institute work; \$2,000 of this goes to the Superintendent. The highest number of institutes ever held in one year was seventy-six.

The State of New York appropriates \$10,000, and seldom goes above forty institutes. It also has a Superintendent at a salary of \$1,600.

Indiana appropriates \$5,000, has a Superintendent of Institutes, etc.

Ohio's report of institutes show that 124 were held last year at an average expense of \$63.09 each, or a total of \$7,825.56.

Wisconsin last year with her \$12,000 held seventy-six, an average of \$171.10 each.

New York, with her \$10,000, held forty institutes last year, an average of \$250 each.

Too much can not be said in commendation of our most efficient Secretary, who has conducted this work in detail, for the very economical and profitable manner in which he has performed his labors. I can not willingly pass from this subject without striving to impress upon you the importance of this work and insisting that you strive through every honorable means to secure for it such support as it so richly deserves. The policy of the State Board of Agriculture has been to make its influence felt in lines of education and development of the industries of the State, and the scheme is such that it is capable of still greater expansion. It is ready to strike hands and walk abreast with the popular educational theme of the day, university extension, believing that while the masses are being awakened to the importance of the education of their children much can be accomplished in enlightening and strengthening the masses themselves, provided there is proper support given this department.

Indeed, when I think how the State Board of Agriculture has reached out from the routine work of simply conducting a State fair as is common with the most of such boards; how this institute work has grown, and may yet be enlarged; how it has taken up and perfected the sampling, analysis and reporting of fertilizers sold in Ohio; how it has enlarged and greatly improved the crop reports until the work of the fair does not embrace one-fourth of its labors; when I think of all this I am fully persuaded that the time has come when we should call this the "Department of Agriculture of Ohio," as better expressing the work performed.—One year ago the agriculturists of Ohio were priding themselves on being better organized than ever before. The position was such that politicians throughout our State and union were thinking anxiously of the morrow. The grange was boasting that it had triumphed in nearly every cause it had espoused. The alliance and various other organizations were successfully championing many just measures, and farmers in general thought they could see the dawn of a better era.

It is to be lamented that in the midst of this successful and just war designing politicians and would-be office-holders were permitted to invade our ranks and divide our forces by leading them away after strange gods, and loading them down with useless burdens that they could not bear, so that while we were loud in denouncing trusts, monopolies, class legislation and unjust taxation on the one hand, we were found demanding them on the other.

We have much reason to congratulate ourselves upon the work done by Secretary Busk during the past year. The removal of the German and French restrictions from our pork has greatly enlarged our field of export for the same, and this coming, *as promised*, so promptly after the enactment of an inspection law to correspond with that of their own country, should encourage us to insist, by all possible means, that Secretary Busk should rise equal to the emergency of the next great want of the meat-producers of this country, the removal of the law requiring the slaughter within ten days after our cattle are landed upon foreign shores, and we believe this will be as readily realized when we can ensure them a clean bill of health.

I sift from Secretary Wanamaker's report that he regards the P. O. Dep't in such a condition as to justify a reduction to penny postage or rural delivery of the mail. I desire to very briefly refer to this matter, believing rural delivery far preferable in the eyes of the agriculturist to the reduction of postage, and much more in the line with

our idea of the education of the masses by placing directly before them better facilities for getting in touch with the State and national pulse.

I also desire to remind you of the fact that much pressure is being brought to bear upon our Congressmen, in regard to a bill already introduced designing to squander millions of dollars in national irrigation. I feel we are united as agriculturists in believing that the prime cause of agricultural depression during the past years is due to over-production made possible because of the undue haste of our government to develop the west, which has been done to the great detriment of the east.

The National Irrigation Congress assembled some time since at Denver, Colorado, passed a unanimous resolution demanding that the arid regions of the west should be ceded to the adjoining States and that liberal appropriations should be made for the purpose of irrigation. Not a single State east of the Missouri river is interested in this scheme of local legislation, and will surely consider it very unjust that they should not only be asked to relinquish their claim upon these lands but should contribute millions to their development.

The first principle of self-protection should array every eastern farmer against this proposition, so without further comment I desire to submit it to you as worthy of your careful consideration.

No doubt much legislation will be introduced this year that will need your hearty support, and although we have suffered ourselves to be divided and have met with reverses, yet the field is not without hope. The tide is in favor of the producer; our consuming class is increasing much more rapidly than the producers. Indeed, according to our census, we have reached in the United States what will be known in history as an epoch of municipal and industrial development, the parallel of which can not be found in the history of any nation, ancient or modern—having added 7,000,000 to our towns and cities during the past ten years, causing the ratio of those residing in cities and towns to leap from 22 to 30 per cent. of the aggregate population of 1890.

Then let us profit by the experiences of the past, be alert to seize the opportunities of the present and future, ever remembering that great issues are not born in a day, and if by education the social structure is made right the body politic will care for itself.

The Chair: Gentlemen, what is the further pleasure of the Convention? According to the program, if there is nothing else to be brought before the Convention at this time, the report of Treasurer A. H. Kling will be in order. On account of the serious illness of Mr. Kling's wife, he is not able to be with us to-day. His annual report, however, will be read by Assistant Secretary Fleming.

Mr. Fleming then read, for Mr. A. H. Kling, the following:

TREASURER S REPORT.

ANNUAL STATEMENT SHOWING THE FINANCIAL TRANSACTIONS OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE YEAR JANUARY 1, TO DECEMBER 1, 1891.

The following statement for the year 1891 embraces the transactions since the last report, January 1, 1891, and covers the accounts from that date to December 1st, the date now arranged for closing the fiscal year. It also shows the general financial condition of the Board. The statement is a complete summary compiled from the journal and ledger record of itemized accounts.

Expenditures from the several funds have been by checks and orders properly signed by the President and Secretary.

Respectfully,

A. H. KLING, *Treasurer.*

RECEIPTS.

From State Appropriations.

Balance from last year in appropriation for encouragement of agriculture.....	\$1,437 42
Appropriations for the year 1891, and first quarter of 1892 for the encouragement of agriculture	6,500 00
For contingent expenses	1,000 00
For carpets and furniture	175 00
For redemption of centennial bonds.....	45,000 00
For payment of interest on centennial bonds.....	2,939 63
For redemption of first mortgage regular bonds of the Board, payable July 1, 1891	10,000 00
For redemption of second mortgage regular bonds of the Board, payable July 1, 1891.....	5,000 00
For one year's interest (January and July, 1891), on total issue of first and second mortgage bonds	4,800 00
Total by State appropriations	974,852 05

MISCELLANEOUS.

Charged to Treasurer.

Balance in hands of Treasurer at close of last year.....	\$682 79	
From county allowances and collections under the farmers' institute law.....	4,779 84	
From L. N. Bonham, Secretary, for fertilizer license fees collected	5,900 00	
From sale of hay	157 91	
From stall rents and track privileges	293 00	
From bicycle club, being amount advanced to secure cost of preparing track and grounds for meeting.....	75 00	
From bicycle club, being proportion of receipts of meeting for use of grounds as agreed.....	171 12	
From rent of grounds for horse sale.....	230 00	
From sale of old office carpet.....	7 80	
From sale of surplus coal and coke.....	12 37	
From sale of medal given in lieu of premium	6 00	
From surplus from fund for expense of members attending live stock meetings and conventions at Chicago, November 16th to 20th.....	40 00	
From State appropriation to refund money advanced for January 1st, interest on bonds.....	2,401 13	
Total miscellaneous		\$14,756 95

PROCEEDS STATE FAIR 1891.

From sale of single admission tickets.....	\$23,323 50	
From sale of half tickets.....	266 50	
From sale of carriage tickets.....	25 00	
From sale of special tickets.....	371 50	
From sale of grand stand tickets.....	2,635 10	
From sale of exhibitors' tickets.....	397 75	
From live stock and speed entrance.....	4,129 29	
From sale of privileges.....	2,580 00	
From American Trotting Association for settlement of suspensions.....	150 00	
Total State Fair		\$33,878 64
Total receipts from all sources.....		\$125,487 65

Under the head of miscellaneous receipts charged to the Treasurer is an item of \$2,401.13, which is really but a transfer from the State appropriation for payment of interest, to the funds in hands of Treasurer, for repayment of amount advanced from Treasurer's funds to pay January interest on bonds, awaiting passage of appropriation bill. The amount had, however, to be charged to Treasurer and credited to appropriation in order to show correctly the distribution of all funds. The actual receipts are therefore this amount less than shown, and the actual disbursements the same amount less, it being a debit and credit in two different accounts or funds.

DISBURSEMENTS.

For old outstanding checks redeemed.....	\$10 00
For premiums.....	15,089 05
For printing and advertising.....	8,789 71
For labor and assistance.....	8,432 96
For material and supplies.....	1,159 75
For buildings and improvements.....	11,280 61
For forage and meals.....	478 00
For expense of members	1,283 01
For office expense	595 54
For postage and telegraph.....	527 94
For express, freight and drayage.....	167 89
For salary of secretary.....	1,833 26
For salary of assistant secretary.....	1,650 00
For salary of stenographic clerk.....	620 00
For salary of messenger clerk.....	345 00
For expense of farmers' institutes.....	3,263 26
For salary of superintendent of fair grounds.....	405 00
For fertilizer analyses and inspection.....	3,503 24
For interest on bonds.....	7,738 50
For interest reimbursement (special).....	2,401 13
For interest on temporary loans.....	7 06
For redemption of bonds.....	60,000 00
For refunded entrance and admissions	94 25
Total	\$119,675 16
 From which deduct for outstanding unpaid checks of present year	 92 55
Showing disbursements from all funds	119,582 61
Which compared with the receipts from all sources as stated shows, balance cash on hand Dec. 1, 1891.....	5,905 04
This balance consists of, cash in hands of Treasurer.....	\$3,039 09
In State appropriation for encouragement of agriculture.....	2,522 83
“ “ “ contingent expenses.....	343 12
Total.....	\$5,905 04

LIABILITIES.

First mortgage bonds.....	\$50,000
Second mortgage bonds.....	15,000
Outstanding unpaid checks of 1891.....	92 55
Outstanding unpaid checks of former years.....	327 45
Total.....	\$65,420 00

RESOURCES.

The resources, in addition to cash balances on hand, is the sum of \$2,000 still due from the C. C. & St. L. Railway Co., as the final payment on its agreement for the location of the State Fair, which sum is not at present available.

The balances in State appropriations can only be used for the purposes for which the appropriations were made.

COST VALUE OF FAIR GROUNDS AND IMPROVEMENTS.

At the close of last year the cost value of fair grounds and improvements was	\$243,920 63
During the year 1891 there was expended for buildings and improvements the sum of.....	11,230 61
Making the present cost value of fair grounds and improvements.....	\$255,201 46
A value in excess of the total liabilities of \$189,781 46.	

The Chair: You have heard the report of the Treasurer; what is your pleasure?

Mr. Foster: Mr. President, I move its adoption.

The motion being seconded, is carried, and report adopted.

President Black: The next in order will be the report of the Auditing Committee. Is that committee ready to report?

Mr. N. Ohmer, of Dayton, a member of Auditing Committee, then read to the Convention the following report of Auditing Committee:

REPORT OF THE AUDITING COMMITTEE,

For the financial accounts of the year to December 1, 1891.

The undersigned committee appointed to examine the accounts of the Board and the Treasurer, submit the following report:

Having made a careful examination of the journal entries of expenditures, comparing the same with the bills and vouchers and the checks and orders issued in payment and corresponding to the journal account, we find the same correct, the expenditures properly authorized and properly recorded.

The account of receipts we also find to be correct and properly recorded. They are divided into two classes, those resulting from State appropriations and charged to the several appropriation funds, and those resulting from miscellaneous sources and from the proceeds of the Annual State Fair, charged to the Treasurer.

State appropriations have been drawn upon at the State Treasury for the purposes for which the appropriations were made. Funds in the hands of the Treasurer have been drawn upon for the expenses of the fair, improvement of the grounds, expense of farmers' institutes, inspection of fertilizers, etc.

All orders and checks have been properly issued and signed by the President and Secretary as required.

The annual financial statement very clearly and correctly sets forth the receipts from all sources, the distribution of accounts and the balances on hand at the close of accounts, December 1, 1891.

Of the several accounts, the following are those occasioned by the running expenses of the Fair and paid from funds in the hands of the Treasurer:

For old outstanding checks	\$10 00
For premiums	15,089 06
For printing and advertising.....	3,789 71
For labor and assistance	3,432 96
For material and supplies.....	1,159 75
For forage and meals.....	478 00

For expense of members.....	\$1,283 01
For salary of Superintendent of Grounds.....	405 00
For refunded entrance and admissions..	94 25
Total	\$25,741 78

The receipts of the fair, we find to have been \$33,878.64.

Showing net earnings of fair, over the running expenses, \$8,186.91.

During the year, in addition to the running expenses of the fair, there was expended from miscellaneous and fair funds in the hands of the Treasurer, for permanent buildings and improvements on the grounds the sum of \$11,280.61.

Thus showing a total expenditure during the year, for the fair and upon the fair grounds, of \$3,143.70 in excess of the fair earnings for 1891, consequently there is no surplus to place to credit of sinking fund.

The liabilities of the Board are as set forth in the statement. The resources, in addition to cash balances on hand is the sum of \$2,000 still due from the C. C. & St. L. R'y Co., as the final payment on its agreement for the location of the State Fair on its line of road. The amount is not, at present, available.

The cost of the State Fair grounds, buildings, and improvements thereon to date, has been \$255,201.46, being a cost value in excess of the liabilities of \$189,781.46.

We desire to commend the neatness and correctness of the journal and ledger accounts of the Board, as conducted by the Assistant Secretary, and also the very comprehensive summarized statement recorded at the close of the journal.

E. L. HINMAN,
N. OHMER,
A. J. CLARK.

The Chair: Gentlemen, you have heard the report of the Auditing Committee; what will you do with it?

A motion by Mr. Foster, duly seconded, was carried, and report adopted.

President Black: The next thing is the appointment of Committees on Credentials and on Resolutions. What is the wish of the Convention in regard to this matter?

Mr. Foster: Mr. President, I move that the Chairman, as usual, appoint the committees.

Motion seconded and carried.

President Black: The Chair desires to name upon the Committee on Resolutions, J. H. Brigham, Fulton county; W. N. Cowden, Guernsey county; F. W. Dunham, Brown county. For Committee on Credentials, J. F. Robinson, Seneca county; J. R. McClelland, Muskingum county; J. B. Hoge, Belmont county.

The Chair: What is the further pleasure of the Convention? I desire to call your attention to the importance of any member, who has any thing that they wish to bring before the Convention by way of resolution, presenting it, as early as possible, to the Chairman of the Committee on Resolutions, or some member of that committee. In this con-

nection I would suggest that the Committee on Resolutions and the Committee on Credentials meet in the agricultural rooms at 1 o'clock to-day. The next thing in order will be the nomination of members of State Board of Agriculture, nomination of five members.

Mr. Jackson, of Greene county: Mr. President and gentlemen: Two years ago, before a meeting of this Convention, I placed in nomination a gentleman from my county as a member of your Board. I spoke highly of him at that time, as I believe he deserved it, and you kindly elected him. I said that he would make you a good sheep man or a good cattle man, and I believe, from what I learn of his services the past two years, that he has entirely fulfilled my promises. I will not take your time to state his good qualities. I think, from what I have heard, he is not only a good man, as represented, in these departments, but in all the departments of the Board. I desire to place in nomination for re-election Mr. J. W. Pollock, of Greene county, Ohio.

Mr. Foster, of Champaign county: Mr. President, I rise for the purpose of placing before this body, for re-election, the name of Mr. N. Ohmer, of Montgomery county. I do not deem it necessary to say any words in praise of his career as a member of the Board, or his work in the Board, as his deportment would speak higher than any word I could utter. Horticulture and floriculture have always been recognized by the Board. They are two of the principal departments of our agriculture, and I therefore desire to say nothing more except to place him in nomination before you.

Mr. J. H. Brigham, of Fulton county: Mr. President and gentlemen: It is a recognized fact that, whilst this is an agricultural convention, and that the men placed upon this Board should be directly connected with and largely interested in agriculture—most of them, at least—yet I believe that it is good policy to connect with this Board men who represent other interests. My experience as a member of the Board has convinced me it is very important that there should be among this Board one member from the city of Columbus, or from the county of Franklin, in order to interest the great industries of this city and county in the success of the fair, and to use his influence to encourage and enlarge the attendance from the city; and I therefore have the pleasure of announcing for re-election the name of the Hon. E. L. Hinman, of Columbus, who has served for two years and has been one of the useful, active and efficient members of the Board.

Mr. McNamee, of Harrison county: Mr. Chairman, the agriculturists of the eastern part of the State think that they are entitled to representation upon this Board, and I therefore place in nomination for member of this Board the Hon. G. W. Glover, of Harrison county, a man

well qualified for the position; a man who has been identified with the agricultural interests of the State for many years, and a man who will perform the duties of the position to the satisfaction of all concerned. He will make, particularly, a good sheep man, and will work up interest in that line. I therefore have the pleasure of submitting to this Convention the name of Hon. G. W. Glover, of Harrison county, as member of this Board, and I have an abiding trust that he will be elected.

Mr. Eckley, of Carroll county: Mr. Chairman, at the suggestion of the President of the Carroll County Board of Agriculture, I desire to submit to this Convention, as a candidate for election as member of this Board, the name of Mr. M. A. Roudebush. Mr. Roudebush is an enterprising, progressive and successful farmer, especially interested in sheep and cattle breeding, and he comes from a county that has never had a representative upon this Board; and, indeed, I have been informed that north of Guernsey county, eastern Ohio, at the present time, has no representative upon this Board. I present for the consideration of the Convention the name of M. A. Roudebush, confident that, if elected, he will fulfill every requirement to the satisfaction of everybody; and it will be doing justice to the portion of the State, and especially a county of the State, that has never had any recognition from this society to elect Mr. Roudebush to the position for which I now nominate him.

Mr. Bancroft, of Clermont county: I have the pleasure of placing in nomination for member of the State Board of Agriculture the name of Mr. Chester Bordwell, of Clermont county. Mr. Bordwell is one of the best practical and successful farmers of southern Ohio. He is a man of the highest character, and very extensive personal and business acquaintance throughout the State, thoroughly conversant with every detail connected with stock-raising and stock-breeding, actively engaged for twenty-five years in those industries. He lives in a county which has the oldest agricultural society in the State, and a county which has never been represented on this Board. He comes from southwestern Ohio, which now has no representative on this Board, and which unitedly presents his claims for your most favorable consideration. If elected, he will bring to the faithful discharge of his duty a cool judgment, a business tact and ripe agricultural experience, and a personal activity that will conduce very largely to the successful administration of this Board, and will inure to the benefit of every farmer and stock-breeder in the State of Ohio.

Mr. Dunham: Mr. Chairman: On behalf of the agriculturists of Brown county, I rise to second the nomination of Mr. Chester Bordwell, of Clermont county. We are in the same fix as Clermont, in regard to never having had a member on the State Board of Agriculture. We

would like very much to be represented on this Board. Mr. Bordwell is an all-purpose man, and the farmers here present all know what I mean by an "all-purpose man." You can put him in any place you please upon the Board, and you will find that he will faithfully and efficiently perform the duties assigned to him. Therefore, Mr. Chairman, I hope this Convention will elect Mr. Bordwell, because Brown and Clermont counties jointly ask for that election.

Mr. Cowden, of Guernsey county: Mr. Chairman, I think the importance of distributing these members of the Board over the State of Ohio, is recognized by all. There is one section of the State of Ohio that has not now, perhaps a representative, as well as many other parts of the State. That is the north-eastern section of the State of Ohio, and I have the pleasure of placing in nomination as a candidate for member of the Board, a representative from that section of the State in the person of Mr. F. A. Derthick. He was a candidate here last year for that position and was almost a successful candidate. We all know him all over the State, and can testify to the fact that he is a good and efficient man for the place. I therefore desire to place in nomination for the position of member of the State Board of Agriculture, Mr. F. A. Derthick of Portage county.

The Chair: Are there any other nominations? If there are no other nominations, the Secretary will please read the names of the persons thus far nominated.

Secretary Bonham then announced the following names of candidates for the position of members of the State Board of Agriculture:

J. W. Pollock.....	Greene county.
N. Ohmer.....	Montgomery county.
E. L. Hinman.....	Franklin county.
G. W. Glover.. ..	Harrison county.
M. A. Roudebush.....	Carroll county.
Chester Bordwell.....	Clermont county.
F. A. Derthick.....	Portage county.

President Black: What is the further pleasure of the Convention?

Mr. Foster: Mr. President, I move we take a recess until two o'clock.

The motion being seconded, and carried, the Convention then took a recess until two o'clock.

AFTERNOON SESSION, JANUARY 14, 1892.

The Convention was called to order at two o'clock by President Black, who said:

The first exercise upon the programme this afternoon is a paper entitled "The Rusts and Smuts of Wheat, their Life, History and Prevention," by Prof. W. A. Kellerman, of Columbus, Ohio.

Prof. Kellerman then delivered to the Convention an address upon the subject above announced, which was as follows:

THE RUSTS AND SMUTS OF WHEAT.

[By W. A. Kellerman, Ph. D., Professor of Botany, Ohio State University.]

[Abstract.]

Botanical science has made rapid strides in the past few years. This advance, though not so publicly conspicuous as in case of some of the physical sciences—for example, that portion that deals with the application of electricity—is yet none the less real and important. Assiduous investigators have, within our own memory, placed vegetable physiology on a sound and scientific basis; others have been as patiently and successfully devoting their time and energies to the elucidation of the life histories of vegetable organisms. We know fairly well the cycle of development not only of the common higher plants but also of many of the lower and microscopic species. Among the latter are many forms directly or indirectly inimical to the farmer, some of them—the so called Bacteria—invasade at times, his own organism and cause more or less dreaded diseases; indirectly they do him harm by attacking his crops and reducing his harvest. In this last category are found the two classes of vegetable parasites assigned as the subject of my lecture—namely: Rusts and Smuts of Wheat.

These two kinds of plants are fungi, that is to say, they belong to that lower group which is characterized not only by comparative simplicity in structure, but also by the more important physiological character of being dependent on organic matter for their food. Our common plants can in the presence of the green coloring matter, or chlorophyll and sunlight, convert the mineral matter which they absorb from the soil and the air into organic matter, which then contributes to the building up of the vegetable fabric. But the fungi have no chlorophyll and are therefore compelled to live on matter which is assimilated by our common plants—in short, their parasitic mode of life is a necessity.

Let me observe that notwithstanding their low place in the scale of organic structure and their inability to convert inorganic into organic matter, they yet have a cycle of development as definite and invariable as the common higher plants. The life history of many of the species has already been made out and among these some of the Rusts and Smuts find a place.

If with lens in hand we make a careful examination of the affected blade of wheat, we will find that the red material, or so called red-rust, consists of minute globular bodies which when placed under suitable conditions germinate by sending out a slender tube-like body. These are therefore the reproductive bodies of the parasitic plant—or seeds, we may call them, spores more properly speaking; they penetrate the host plant soon after germination—the slender thread or tube passing into the stomata or breathing pore of the leaf. This tube continues to grow and branch abundantly, penetrating perhaps the active plant and drawing its nourishment from the surrounding tissue—thereby weakening the host plant and reducing the yield of grain. After a short period—say eight or ten days—of such development of the vegetative portion of the parasite, the reproductive bodies or spores are formed in clusters immediately below the epidermis, rupturing the latter so as to expose the mass of red spores. The countless millions of them germinate rapidly if favorable atmospheric conditions obtain and the disease spreads over the field; or to use the farmer's expression the wheat is "struck" with the rust.

But the life history of this rust has not all been told. In the same cluster with the red spores a few black ones may make their appearance, and a few days or weeks later black spores alone are found. Yet they are connected with those same vegetative threads that produced the red-rust or red-spores; the fact is then demonstrated that this parasite produces two kinds of fruit, or as we may say has at least two stages. The red-spores (seeds) are delicate globular bodies, quickly killed by exposure, are called the summer spores; the black reproductive bodies are oblong or pointed, have thick coverings, do not germinate at once but lie dormant through the winter—hence called winter-spores. When they begin to grow in the spring they do not penetrate the wheat-plant, but some one of our common shrubs or herbaceous weeds. And strange as it may seem they do not produce the red or black rust, but instead a form of the fungus known by the common name of "yellow cluster cups," and by the technical name of "*Acidium*." The yellow spots so commonly noticed on violet leaves in the spring, or on barberry or other plants, are examples of this stage of the parasite. This should be called the first of the three stages of this fungus.

The case of our rust of wheat is still more complicated by the fact that there are at least three distinct kind, or species—readily separable by peculiarities of the spores which are easily recognized by the aid of the microscope; also, further by the fact that the first or aecidial stage of one (*Puccinia graminis*) occurs on the Barberry; of the second (*Puccinia coronata*) on Buckthorn, or Rhamnus; and of the third (*Puccinia rubigovora*) on a Gorrage-wort.

From this life history, too briefly traced, it would seem that if the first or aecidial stage be destroyed by promptly cutting down and burning all of the host plants affected by it, no red or black rust could afterward appear. The experiment, however, while in some cases undoubtedly checking the later stages somewhat, is from a scientific point of view a total failure. Red rust in abundance may be seen from year to year, even when the first stage is destroyed. The apparent mystery is solved when I state that it has been repeatedly found that the vegetative stage which produces the red rust spores in many cases lives through the winter. Whether true of all species of rusts affecting wheat I can not say, but I have proof from my own observation and the testimony of others that it is true of some of them.

There is no known method of destroying the rust or preventing its ravages, which does not at the same time destroy the wheat plant also. Experiments however are in progress. Let me relate briefly my own work completed at the Kansas State Agricultural College just before coming to the Ohio State University this year.

I sprayed plots of wheat (also of barley and oats) with the recognized and in many cases certainly efficient fungicides, as follows: Bordeaux mixture, tinct. of sulphur, iron chloride; and on other plots applied flowers of sulphur. I used spring wheat in the experiment, and sprayed the plots first when the plants were an inch or two high, and thereafter weekly until harvest. At this time the treated plots were compared with the adjacent untreated ones in respect to the rust visible. All were alike, or in other words I failed utterly to prevent or even in the slightest degree to check the disease. It is to be hoped that other experimenters will discover other means of preventing this terrible pest.

The smuts of wheat most fertile were briefly disposed of. Their cycle of development is less complex. The smut itself as shown by microscopic examination consists of extremely minute globular reproductive bodies, denominated *spores*—less correctly speaking seeds. When these germinate they infect the seedling wheat plant while it is yet very young and delicate. In this host they grow concealed until approaching maturity; the smut fungus enters the head of wheat in the earliest stage of development of the latter. There are two kinds or species of wheat smut and their characteristics at this stage of development diverge, the one—*stinking smut*—enters the growing grain only, consumes the nourishment which should have been stored up in the latter, but not changing its external shape materially. The ruptured grains at threshing time will show the black mass

within. This smut has a peculiar penetrating disagreeable odor, hence the name. The flour is perceptibly damaged if the wheat is much affected, and both are unsalable.

The other fungus (*loose smut*) penetrates both grains and chaff, and the whole head is presently converted into a powdery black mass more or less weathered away when harvest time arrives. Some of the shriveled remains of the head will yet retain enough of the black spores to make plain the nature of the affection.

It would be a long story to relate the experiments in detail which have resulted in the discovery for the stinking smut of cheap and efficient fungicides; that is to say, modes of treatment of the seed grain (which may have spores adhering to them), that entirely suppresses the disease. I know of no experiments touching the prevention of loose smut except those carried on by my former assistant (W. T. Swingle) and myself, but unfortunately they were not successful and need not be further discussed.

Of numerous fungicides (twenty-four in all) that were used in the experiments to prevent stinking smut one is especially to be recommended, namely, hot water, temperature 132°F. The immersion of the seed in water kept at this temperature should be continued fifteen minutes, when the seed (which should be in a basket or frame lined with wire netting, say twelve meshes to the inch) is first dropped into the hot water the temperature will suddenly fall so low that the spores of the smut that may be present will not be killed, even with prolonged immersion. It is therefore necessary to add at once sufficient hot water to bring up the temperature to about 132°F—*never above 135°, and better never below 130°*. Observing this, and also the further precaution to shake, lift and plunge the basket of seed so as to insure the contact of the hot water with every grain of the wheat, the smut will surely be killed, and the seed thus freed from adhering spores will produce a clean crop. The seed may be treated days or weeks before seed-time, or it may be sowed immediately after treatment and before the grains are completely dried.

Numerous experiments with oats showed in every case that there was an increased yield of grain, due, apparently, to the effect of immersion in the hot water, aside from the mere killing of the smut. Thus, when there was seven to ten per cent. of smut in the crop, the yield from the treated seed was augmented not only by an amount equivalent to that of the prevented smut, but by at least twice that amount. It is very probable that a similar result would be found in case of wheat treated in the manner described above. At any rate the stinking smut can be effectually prevented if a proper fungicide be used. The expense in treating the seed is very trifling, and if it is badly infected great financial profit must necessarily follow.

The Chair: A few minutes will be devoted to the discussion of this subject by the Convention. Any member of the Convention who has any questions to ask Prof. Kellerman, they may now ask them, and I have no doubt he will be pleased to answer.

Secretary Bonham: I would like to ask the Professor whether in his experiments he found that he was able to successfully check the black rust that appears on the head of oats and wheat in the spring. I didn't understand from your remarks whether you had been able to successfully check that or not.

Professor Kellerman: No, sir, we have succeeded in no case in checking the rust. All that we have succeeded in doing is in preventing the smut, and we have not succeeded in preventing all forms of smut. It is only the loose smut of oats and the loose smut of barley and the stinking smut of wheat that we have yet prevented. The loose smut of oats,

which does so much damage, especially in the southern part of this State, as I have been informed, we have not been able to check at all.

Secretary Bonham: That loose black smut that appears on our wheat in the spring was excessive this last spring. We have seen in southern Ohio nothing like it, and I think in some fields in southern Ohio one head out of every five was blighted, and in others one head out of every ten was blighted. Old farmers have often told me that that is a sure sign of a good wheat crop. What is the relation between that and a good wheat crop, Professor? Is there any relation between the two?

Prof. Kellerman: Well, Mr. Chairman, I am glad to talk as long as you will endure it. I thought when I began that I better explain in making what remarks I had to make, that it was a question of endurance; not of endurance on your part to-day, but on my part, because I didn't feel very well prepared to talk. I got along, however, better than I expected, and if you want to endure a little more of it, just go ahead and ask me questions and I will talk all day, if you give me a chance.

I think there is a relation between the two. I don't laugh at a farmer and say "it is all nonsense," when he tells me that the weather has caused this disease or that disease. The fact is the conditions—and I only mentioned it incidentally—the conditions which are favorable to the ordinary average growth, are as a rule favorable to the parasitic growth of this plant. If we have damp days and warm days, a vigorous growth of vegetation, in general, would be very likely to produce a vigorous growth of these parasites; for the simple reason if no other, that these spores germinate very rapidly, and so in the plant the disease is multiplied. There is a relation and a close relation of course; but all I meant to say was that you must not have all these conditions as primary causes. When an acorn germinates, you might say that the moisture in the soil caused the germination. That is right; but if you would say that the moisture in the soil caused the oak tree, I don't know that that would be stating it correctly. At any rate, you never think of any thing else than that the oak tree has developed out of the acorn. Therefore I warn you to think that the smut and rusts are only developed out of the seeds which are planted along with the grain that you sow, or they may, of course, be self-planted, like the most of our weeds, and be in the soil ready to germinate. There is a close relation; and the observation of farmers is of more value to the scientific man than any observations he can make; for the very reason that he has a broader scope and a better opportunity to make these observations. Now, I say to this extent I may agree with the farmer, not that we have thought the farmer was just right when he said damp weather caused it, but we knew from his statement, that he had observed there was a close connection between the two; but further

than that, in the manner I have indicated, I know of no connection. At least that is a general statement that will hold true.

Secretary Bonham: Has there not been some means discovered of preventing this black rust?

Prof. Kellerman: No, sir, not that I know of; nothing that we could consider as scientifically established.

Secretary Bonham: Has not Prof. Bessey stated that by the use of blue vitriol, it will be checked?

Prof. Kellerman: That is the very point at question. I have as a matter of fact, floating in my mind, the impression there has been some such statement made by Prof. Bessey, or some others. I will state what I know—I don't know much about the subject; but it is not intended as any comment upon what Prof. Bessey has said.

Prof. Bessey does say just what has been indicated. I know he does say this, that if you burn smut in your corn fields, you will lessen the smut; that is, you take it out of your field. Last season, I took the trouble to collect a large amount of corn smut and I planted several rows of corn, but before planting it, I put, with my fingers, a large quantity of corn smut in the hill where I was going to put the corn, and then I came along or had a boy come along and drop the corn in and I helped him cover it. Then, to be sure I was going to succeed in this matter, I had a pail of water brought to the field and I dumped the grains of corn into that pail of water so that they would be wet, and then I poured in a mass of smut. Let me tell you that I didn't go out in the fall and gather the smut and keep it through the winter in my laboratory, but I went to the field to a shock of corn at the time I planted the corn and got my smut. Surely it ought to have germinated, because other smut, exposed in this way seems to germinate. I then poured this smut on the wet corn so that the grains of corn were literally black with smut, and in a third case I poured smut on top of the corn after I put it in. There were three different cases. Well, I was, I am glad to say, called to this University before the corn was ripe.

Secretary Bonham: Have you heard from that corn yet?

Prof. Kellerman: Yes sir, I have; my faithful and truthful assistant has reported to me and we have a list. We counted every stalk of corn clear through. We had of course several rows. We counted every stalk of corn and counted the smutty corn, and we had two rows adjoining those which were not so treated, and we found just as much smut and no more smut, on the untreated as on the treated corn, and to make it still more convincing, I treated the corn as I treated the wheat—with hot water and with potassium sulphide, which I do know killed the spores in the case of stinking smut of wheat, as I mentioned a while ago;

and that corn produced ears and stalks that were just as free and no more free from smut than the others—in other words, the experiment showed absolutely nothing. That is all I have to say in regard to Prof. Bessey's suggestion. His suggestion is very reasonable indeed; I am glad I didn't state that; it is well thought that he did.

I think that if we make an effort, all of us, unitedly, and continue it through a series of years, we will get rid of smut, just the same as the farmer has gotten rid of the Canada thistles. You want to renew the attack each year. You can not rid yourselves of it unless there is a united effort of all concerned in that direction. It would do but little good if you were thorough in your effort at extermination when your neighbor would leave some along his fence corners. If you continue your efforts a series of years you will ultimately be successful.

This experiment has also been tried by Prof. Henry and a number of others, but I hardly think as a result of their experiment, they are prepared to say that the smut of corn or the rust of oats is to be prevented by such single treatment as that. That is the only comment I have to make. I hope it is true. It is perfectly reasonable. If I hadn't known by my own experiments and observations, that it will not succeed in all cases, I might have joined the crowd and said that it will prevent it. At the same time Prof. Bessey has recommended this precautionary measure, he has recommended other precautionary methods. I think we all ought to study this fungi, and then we will see whether these recommendations are rational or not; but to say that we can, when we consider the conditions in any given case, in one experiment prevent the rust, it is something that I have not yet known to be true. I have seen any amount of it; I hope this year it will be a success, but yet I don't know that it is.

President Black: It has been hoped that the Governor would be able to appear before the Convention sometime during the day, and I desire to embrace this opportunity to appoint a committee to wait upon His Excellency and inform him that we would be pleased to meet him at this hour. I would name upon that committee Secretary Bonham, Capt. Foster and Mr. Albert French.

The committee above appointed then repaired to the Executive Department, to announce that the Convention was ready to await the pleasure of Governor McKinley.

Mr. Cowden then claimed the attention of the Convention and said At the meeting of the various Live Stock Associations of Ohio embracing the Shorthorn, Shropshire, Southdown, Horse Breeders and the different breeding associations of the State, a committee was appointed to formulate a memorial to present to the General Assembly of Ohio, and also to ask this convention to concur with them, or to join with them in this recommend

ation to the General Assembly. I will read the memorial with your permission.

Mr. Cowden then read the following

MEMORIAL.

We, the undersigned committee, appointed at a joint meeting of the following breeders' associations, viz.: Ohio Short Horn Breeders' Ass'n, Ohio Jersey Cattle Breeders' Ass'n, Ohio Spanish Sheep Breeders' Ass'n, Ohio Wool Growers' Ass'n, Oxford Down Breeders' Ass'n, Ohio Swine Breeders' Ass'n, Shropshire Down Breeders' Ass'n, Polled Durham Ass'n, Polled Angus Ass'n, Draft Horse Ass'n, and Trotting Horse Ass'n. Said joint meeting was held in the rooms of the State Board of Agriculture, January 13, 1892, and charged your committee with the duty of memorializing the General Assembly of Ohio, also with the duty of asking this Convention to join in said memorial, praying the General Assembly to appropriate such sum of money as will secure a full and creditable exhibit of the live stock of Ohio at the Columbian Exhibition, and also such a sum of money as will secure a full and creditable exhibit of the wool, fruits, grains, etc., of the State.

We support said memorial by the following, among other reasons:

The trouble, expense and risk of preparing and exhibiting live stock is so great that few men will care to take said risk even if they have reasonable assurance of being successful exhibitors, and the small number of premiums offered reduces the chances of success so much that some additional inducement must be offered if Ohio would make the creditable exhibit which her position in the sisterhood of States and her present leadership in all material and economic questions entitle her.

The expense and risk of an exhibitor commences long before the opening of the exhibition, continues all through the exhibition and long after, and can not be lessened by patents nor divided by insurance.

Again, the importance of a full exhibit of Ohio live stock and agricultural products can scarcely be estimated. We pressingly need now a wider market for our finely bred and developed stock, not only in the various States of the Union, but in the other nations of the world, and the time will not soon come again when such an opportunity will be repeated of exhibiting our productions to the people of the world. We should especially make such an exhibit of numbers and quality as will impress the citizens of South America, with whom we are soon to have more intimate trade relations, with the fact that Ohio not only produces more new breeds than all the other States combined, but that Ohio is headquarters for all the breeds, both old and new.

These states will in the near future buy from some of our states the stock needed to grade up their stock, and how important that these purchases be made from us—important not to the breeder alone, but to all the people of the State as well.

These and many other considerations impress your committee that the amount asked for by the Associations we represent, viz., \$40,000, is the very least amount that will creditably represent Ohio in said exhibition, and that \$ will be needed to properly represent the agricultural products of the State.

We are encouraged to confidently ask and expect this amount because it is less than the average amounts granted by the legislatures of the states surrounding us for their live stock exhibit.

All of which is respectfully submitted.

W. N. COWDEN,
WM. S. FOSTER,
S. H. TODD.

President Black: What is the pleasure of the Convention in regard to the memorial just received?

Mr. Wilson, of Madison county: I move the Convention indorse the recommendation of the committee and appoint a committee of three to present it to the General Assembly.

The motion being seconded, was carried.

The Chair: Is the Committee on Resolutions ready to report.

Mr. Brigham: The committee is ready to report, but I will ask the Secretary, Mr. Cowden to read the report, as he is more familiar with the writing than I am.

President Black: Before hearing the report of the Committee on Resolutions, I would like to inquire of the Convention how the committee suggested by the memorial just read, shall be appointed?

Mr. Cowden: I would suggest the name of Senator Wilson as one member of that committee.

The Chair: Senator Wilson is nominated as a member of that committee. Who else will you have, gentlemen?

A Member: I suggest that the President appoint the other two members.

President Black: I will appoint Col. Brigham and Mr. N. Ohmer as the other two members of that committee.

Mr. Ohmer: I wish the Chair would be kind enough to withdraw my name from that committee as I don't expect to be here at that time, and therefore will have to decline the honor.

Chairman Black: I will appoint then in place of Mr. Ohmer, Mr. W. N. Cowden. The committee will then consist of Senator Wilson, of Madison; Col. Brigham, of Fulton; and W. N. Cowden, of Guernsey. We are ready to hear the report of the Committee on Resolutions.

Mr. Cowden then read the report of the Committee on Resolutions, which was as follows:

1. That this Convention approves the course of the Secretary of Agriculture for his labors in behalf of the live-stock interests of the country, and we further ask him to continue his labors until the present restrictions on our export cattle and sheep are removed.
2. We approve the recommendation of the Postmaster General for free general postal delivery so far as practicable.
3. We oppose any Congressional appropriation to irrigate the arid lands of the country.
4. We appreciate the action of the trustees of Ohio State University in strengthening the departments of practical agriculture, horticulture and forestry, veterinary science, agricultural botany, chemistry, entomology and botany, and that we especially commend the establishment of a short course in agriculture and the free scholarship offered therein.
5. That we thank those members of the faculty of the State University and the officers of the Experiment Station for their valuable assistance at farmers' institutes, such service being freely given without compensation.

6. That we extend our thanks to the citizens of Wayne county for their generous donation to the Experiment Station, and that we urgently request the State Legislature to supplement the gift by such appropriations as may be necessary to make the Station abidingly useful to the great agricultural interests of the State.

7. That we cordially indorse Governor McKinley's recommendation to the General Assembly as to the canals of the State, and we recognize the fact that the trend of legislation in all civilized countries is in favor of water-ways as a means of communication.

8. That good policy as well as good morals requires that we discourage the sale of privileges at all our fairs of all games of chance, and all wheels of fortune, and all demoralizing shows.

9. We again commend the State Board of Agriculture for their very liberal construction of the law relating to the farmers' institutes. We commend their course in this matter and pledge ourselves that no backward step shall be taken in this work, and look forward to the time when every section of the State shall be supplied with a cheap means of educating the farmers of Ohio.

At this point the further reading of the report of the committee on resolutions was interrupted by the appearance of Governor McKinley in the Senate Chamber, accompanied by the committee appointed by the Convention to escort him thence.

The arrival of Major McKinley was the signal for a hearty round of applause.

Mr. Foster then claimed the attention of the Chair and said: I move that the business of the Convention be suspended for a few moments, in order that we may hear from Governor McKinley, as the Governor's time is somewhat limited to-day.

The motion being seconded, was carried.

The committee then escorted Governor McKinley to the President's Chair, and President Black introduced him to the Convention in the following language:

GENTLEMEN OF THE CONVENTION: I will not consume your time in telling you of the great pleasure it affords me to introduce to you, not only your Governor, but a man of national reputation. Neither do I consider it worth while to consume your time in an introduction, for every man in this house probably knows him quite as well as I do.

Hon. William McKinley, Jr., the newly installed governor, then addressed the Convention as follows:

MR CHAIRMAN AND GENTLEMEN OF THE AGRICULTURAL SOCIETY OF OHIO: I am very glad to meet you this afternoon, and regret that my official engagements at the beginning of a new administration will not permit me to spend as much time with you as I otherwise would have been glad to have done.

I understand that I was to bid you welcome to the capital of your State. It seems to me that this was a work wholly unnecessary, for you are only assembling at your own capital, in your own State; but if any

welcome is needed, I desire to extend that welcome in the heartiest and most cordial manner to each and every one of you.

What I have on my mind most at this time, in connection with the interests of agriculture, is good roads throughout Ohio. I know of no single need so great and so pressing as to have our public highways made passable in winter as well as in summer, and there is no doubt in my mind, from the investigation I have given the subject, that the advantage and economies to the agricultural people would very far exceed the expense that will be attendant upon such improvements.

I want to say to you, gentlemen, that in my official capacity it will be my pleasure to co-operate with you in every effort to give agriculture the fullest recognition. I was very much impressed last spring, as I rode to the State convention held in this city, with an interview I had with a farmer who was coming as a delegate to the convention. I said to him: "What do you farmers want touching legislation in Ohio?" He said: "The farmers of Ohio want no legislation for their special and exclusive use; they simply want that legislation touching their interest which will not only do them good, but be for the general good." It occurs to me, gentlemen, that that was the right spirit. The farmers of Ohio and the farmers of this country have been the most patient of any class of our fellow citizens, and always patriotic. They have been the most conservative; they have been the safest counselors, and they have furnished to us the best sentiment and best civilization of State and country.

You will have your interests to look after, and must do so, for every other interest is vigilantly guarded by its representatives. While a member of Congress from this State for many years, in touch with the great industrial interests of the country as I was, I was more than once impressed how helpless the farmers were before the great legislative bodies of the country contrasted with other interests. Every other great interest, every other great industry, had vigilant and able and capable representatives. They could concentrate in a single moment. Telegraphic dispatches from Washington to any great interest in the country other than yours, that their interests were involved in legislation before Congress and was in jeopardy at Washington, and in twenty-four hours the ablest men in the country appeared to defend and protect them.

Your population is scattered. You do not have conventions frequently; you do not assemble often enough. When your great interests are in jeopardy, as they have been in the past, it was next to impossible to have the power of concentrated effort from the farmers of Ohio and from the farmers of the country, and congresses and legislatures are very human. They never look out for any interest better than that interest looks out for itself; and if I had any advice to give to the farmers of Ohio

to-day it would be a thorough and complete organization in their interest, for their highest interest is the highest interest of all our people.

There is one thing that they all might as well make up their minds to down in the East, that they can't have wool free when it comes from the sheep's back and put a tariff on it when it comes on our back. [Applause.] They can't have wool come into their factories in New England free and come out of their factories with a tariff to the American people.

And now, gentlemen, having said this much without any previous notice, and being very busy, as you know I am at this time, I beg to thank you for having been called into your presence and the pleasure which it gives me to meet all and say: In all your interests during the next two years, if you don't have my co-operation and assistance, it will be your fault and not mine. [Hearty applause.]

Mr. Cowden then continued the reading of the report of the Committee on Resolutions, as follows:

10. WHEREAS, The official term of one of the trustees of Ohio State University will soon expire, and it is desirable that the managers of that institution should be men in sympathy with the paramount purpose of the congressional grant on which it was founded, and the more recent grant for its further encouragement and support, viz.: The teaching of such branches of learning as relates to agriculture and mechanic arts;

Resolved, That the Governor be respectfully requested to appoint to such vacancy some leading representative of the agricultural interests.

11. That the thanks of this Convention are due the sergeant-at-arms for his attention.

12. That in the death of Major B. W. Carlisle, President of this Board in 1879, agriculture has lost a true friend, the State a good citizen.

13. That this Convention recommend the appointment of S. H. Todd for the position of Superintendent of Swine at the Columbian exposition.

President Black: You have heard the report of the Committee on Resolutions; what will you do with it?

Mr. Foster: Mr. Chairman, I move you that it be accepted, then each resolution read separately and voted upon in that manner.

Motion seconded and carried.

Assistant Secretary Fleming then read the first resolution, as follows:

Resolved, That this Agricultural Convention approve the course of the Secretary of Agriculture for his labors in behalf of the live stock interests of the country, and we further ask him to continue his labors until the present restrictions on our export cattle and sheep are removed.

The Chair: Gentlemen, you have heard the resolution read; what is your pleasure?

Mr. Cowden: I move its adoption.

Seconded, carried.

Assistant Secretary Fleming:

Resolution 2. We approve the recommendation of the Postmaster General for free rural postal delivery, so far as the same may be practicable.

A motion for the adoption of this resolution was then made, seconded and carried.

Mr. Fleming:

Resolution 3. We oppose any congressional appropriation to irrigate the arid lands of the country.

Mr. Foster: Gentlemen, I heartily move the adoption of that resolution. That is a very serious problem to the people east of the Mississippi river. We have millions of acres of land in the South and hundreds of thousands of acres of lands in our other states that can be bought at a very low price and want cultivation. This is a scheme to bring in competition with the farmer east of the Mississippi all these vast acres of land at the expense of the general government. We have now spent \$800,000 in irrigating lands at the expense of the general government; three different congresses have made vast appropriations, the last being \$250,000. I, therefore, move the adoption of that resolution. Seconded.

Mr. Baker: I shall oppose that resolution. I believe it is unfair to the citizens of the West to pass such a resolution. There are lands there which are capable of the highest degree of cultivation, but for the want of irrigation can not be cultivated. Many people have invested in such land with the expectation that they will have fair play from the government of the United States. They have voted for measures beneficial to the eastern states and the middle states, and now they ask the eastern and the middle states to help them. I don't speak against this resolution because it is of any personal interest to me; but it seems to me, in fairness to the citizens who have located in the West in anticipation of this needed legislation, that they should not be neglected. Some of these lands when irrigated are wonderfully productive.

One of my sons raised fifty-seven bushels of spring wheat to the acre last year, on part of his land, where he had over one hundred acres in wheat. I think this resolution is unfair to the West. I know land is cheap enough in Ohio. I am sorry to say I have a farm which I can not sell; I have been trying to sell for five years and thus far unsuccessfully. Land is too cheap here. Land is worth more there than it is here. My son sold a farm of two hundred acres, a year ago, for more than any farm in Ohio would bring. I oppose that resolution on these grounds. I

think the West ought to be encouraged as well as other parts of the country. My friend, Mr. Foster, ought not to begrudge the prosperity of our Western friends.

They don't ask for these appropriations to irrigate the mountains, but the fruitful valleys. Don't be afraid of the West! It may pinch us, but let us console ourselves with the thought that it is fair for them and let them do what they can to reclaim those fertile lands.

Mr. Foster: I dislike very much to differ from my old friend, but I have made some investigation of this question. I drew a similar resolution two years ago.

Mr. Baker: I know you did.

Mr. Foster: There are millions of capital going to the Western states, in order to buy these lands, and make investments for the purpose of irrigation on which they are making from eight to fifteen per cent. That is a way by which that country can be irrigated. Not by our general government at the expense of those not interested, but by private capital. One million of capital has left the city of Cincinnati within the last four months, and have bought their plant and built their reservoir, enclosing mountains and valleys, and are prepared to irrigate the land. You can not buy stock in that concern. It is a means of investment and a source of revenue for private capital. I have investigated this subject in California and on the Pacific slope, and after that investigation, I am opposed to the appropriation of any more money by the general government for any such purpose. Congress has already appropriated eight hundred thousand dollars for this purpose, and the land has been thrown open to speculators and they reap the benefit, while we pay our proportion of the taxation which is for their interests and not ours. [Applause.]

Mr. Baker: I don't oppose this resolution on the ground that all the lands in the West should be irrigated; but the lands owned by the English syndicates—although I am an Englishman myself—I do not want those lands to be irrigated at public expense. But, I want the actual settlers to be encouraged. The pioneers who are the actual settlers of the land I think should be encouraged by the government. I, therefore, oppose the adoption of this resolution.

Mr. Phelps of Franklin: I am not a member here but I would like to have the privilege of saying a word. Mr. Chairman and Gentlemen, I happen to know something about this irrigating matter in the West from the fact that I have some friends who have gone there and taken up homesteads—men who served three years in the army; who have no property here, not money enough to buy lands here. One of my friends went out into Colorado and took up a homestead and threw up his claim in two years, having served three years in the service, because he had no

money to improve that land. These irrigating companies who go out there charge just whatever they please for the privilege of using their water. This friend of mine did not have the means to pay what they demanded. His land lay right between two irrigating canals, one being finished and the other about completed. He could not stay there and improve his farm from the very fact that he could not pay for the water at the rates charged him by these irrigating companies. Now, if the government will step up and furnish the money to make these canals and furnish the water privileges to these poor men at a cheaper rate than private capital, I think it is right that it should be done.

A Member: Mr. Chairman, I see President Thompson, of Miami University, in the audience, and I happen to know that he formerly resided in Colorado and may be able to tell us his experience on this subject. I have no doubt the Convention would be pleased to hear from him.

President Thompson of Miami University then came forward and said:

Mr. President and Gentlemen of the Agricultural Convention of Ohio: As has been said, I have been a resident of Colorado for six years and am somewhat familiar with the action of conventions and assemblies of this sort concerning this irrigation problem, inasmuch as the question of proper water supply is a burning problem in Colorado. Of course, everybody here is interested in it. If I am permitted for just a moment or two, I will give you a brief history of irrigation in that State. In the earlier days, irrigation was confined to the districts along the streams of water, and certain water rights were then obtained by the farmers congregating together in companies and organizing ditch companies along those streams of water, some of which were made to cover as much as twelve or fifteen thousand acres of land. That was in the earlier days before the State came into the Union. Upon coming into the Union, it was then decided, by constitutional enactment, that all unappropriated water should be considered as belonging to the State; that is to say, should be held by the State for the good of the people. A number of companies had been formed under State regulation, and by this means the matter of irrigation has been extended very largely until the agricultural output of Colorado is very nearly equal to the mineral output and will in future years no doubt exceed it. But the practical problem of the farmer there is simply this—whether water, which is the one great need of the country, shall be gotten from private corporations, which always involves a little extortion in rates, or not. Most of you know, after the organization is made and the corporation is formed, and we have what we call in modern times, a “trust” or something of that sort, it is exceedingly difficult to control it. We can usually control such things before they exist better than

afterwards. The consequence is, that those portions of Colorado that are under obligations to these private companies for water privileges, find it difficult to get water even when contracted for, and find it always necessary to pay a very high rate for it. There are two distinct questions before the people of Colorado. The first is, a proposition to have the government see what can be done in an experimental way upon a scientific basis as to the irrigation of certain portions of the country. The second is a proposition for the government to take hold of this property question and to hold it and control it, and to allow it to be given solely and only to actual settlers and to be charged for by the government at such rate as will yield to the government a slight profit for the investment.

But I do not understand that anybody there advocates the proposition that the government shall donate the money or the water to the people free of charge. Such an enterprise at a great distance from the mountains will involve so much expenditure, that private capital, such as is represented by the Colorado farmer, can not engage in it; and to allow outside capital to come in and engage in the enterprise would lead to the formation of trust or monopoly, which would impose upon the farmers extortionate rates instead of allowing them these rights and privileges at little more than actual cost. So that there is a sentiment against such enterprise upon the part of private capitalists. There is a general belief among the people that if the government were to take hold of that problem and so bring these lands into possible cultivation and then make such charge for this water to the farmer as would afford a fair remuneration for the investment, that the people who propose to actually settle in that country would get what they need at something like a fair living rate. That is the problem as presented to the citizen of Colorado. I think the resolution before this house, as a general resolution, perhaps would not conflict in sentiment with any thing I have said, or that the best people in that country would have to say upon the question. But as to the general question of appropriation, I think you want to keep in your minds distinctly the fact that the government as such, has no right to go into the private land business for the private individual or citizen. But I think that question is separate from this resolution. The principle is just this: If the government as such was to undertake to irrigate lands that belong to the private individual for his benefit, it presents exactly the same problem as if the government should undertake to drain the lands of the farmers of Ohio for their special benefit, and certainly we shall all agree that neither of those things could be done. The other question as to whether the government, at its own expense, could make an investment that would afford a fair return to the government and at the same time afford relief to the actual settler, where private investments

can not do the work, would be to my mind a very different question. But, Mr. Chairman, I don't think I ought to enter into a discussion of the merits of these various propositions as they are not involved in the question under discussion. I am very much obliged to you, gentlemen, for listening to my talk. [Applause.]

Mr. Brigham: I do not like to disagree with my friend from Lorain county, but in this instance I am forced to do so. There is already pending in Congress a measure asking that an appropriation be made for the purpose of establishing reservoirs, etc., to irrigate this land which is now unproductive because it lacks water. I found in my travels in one of those states this summer, considerable disposition upon the part of some speculators to get the government to help them to a good plant so that they can supply water, and the impression upon my mind was that the fellows that were at the bottom of it were schemers; that the ordinary poor man that was going to work upon this land and raise crops upon it, would get no particular benefit from it. Now, I am opposed to the government appropriating any of our money for the purpose of building up competitors. I can remember a few years ago—not a great while ago, either, when I was a boy—(I would not have it understood that that was a great while ago) [laughter], a number of us went up into Northwestern Ohio and shook with ague, and encountered all the other hardships that surround the pioneer in building a home, while we were draining those swamps and clearing those forests. The government never helped us, but we helped to sustain the government while we were doing that work. They gave us no assistance and we asked none; and I am opposed, as a farmer of Ohio, to the general government giving a dollar to build up a competitor to the farmer of Ohio, and the farmers of other states that have done their work without such aid. There is no necessity for it. Over-production is now the chief difficulty in our country. It has been over-production by the opening up of the great West in consequence of the building of these great railway lines in advance of the necessity for it, that has placed mortgages upon the farmers' homes of this State. It has more to do with it than the tariff or the financial system of our country.

That is my opinion about it. And now, I am apposed to go any further in that direction. When the time comes that those lands are needed to feed the people of this country, and the people who buy our produce—of course we are not interested in those who will not buy it—show us that that time has come and there is a necessity for the cultivation of these lands to produce food for the people of this country and that it will not build up competition for the farmers of Ohio, then I am in favor and will be perhaps in favor of something of this kind. But I want to say this, that whenever you develop a system of irrigation which will

increase the production of the great West three or four times, you will bankrupt all the farmers that are there now. Their only hope of making any money is upon the home market that surrounds them, and a few of them can make money, farming in those states, by irrigating their land, so long as they are not brought in contact directly with the farmers of Nebraska, Iowa and the farmers of those other states who can raise crops without these disadvantages. It is the transportation charges that protect them. I found that out in Fort Washington this summer. I found farmers there who received for oats five cents a pound and wheat about the same and a good price for potatoes, and ten or twelve dollars for hay. Just over at New Buffalo, another government station, I found that oats and other products were cheaper than they are in Ohio. Why? Because those farmers produce more than the local demand would consume and they got nothing for their labor. It will be just so around those stations in Wyoming whenever there is more of a supply than the demand will consume; then those farmers will get nothing, and they will be in the worst possible condition.

I am not in favor of building up competitors and opening up competition all over this country to injure those farmers, and I am particularly opposed to building up competition which may injure the farmers of Ohio and other states. We have had enough of that. The Governor has well said to us that we will have to look out for our own interests. We have got to do it. We have acted the fool long enough as a class. If we don't do that; if we do not watch as well as pray, and fight when it is necessary to protect our interest, in a legitimate and proper way, we ought to suffer. I am opposed to this and all other schemes of the kind. I believe it is not to our interest, and therefore I hope the resolution will carry. [Applause.]

Mr. Baker: This is the first time I ever thought my friend, the Colonel, was selfish. He talks about the competition between the Western and the Eastern farmer. We are all citizens of the United States and all these lands are part of the same country. Colorado and Wyoming belong to the United States as much as the State of Ohio. They are citizens of the union the same as we are in Ohio. What is competition? We know by irrigating these lands, they will raise more crops. But there is overproduction now in the country and it will be more so then. But why should we be so selfish as to wish to keep them back if they can produce such good results? That is my principle. Let the farmers of Ohio go to work and see what can be raised here. Let them take the water out of their lands to begin with. We have too much water in our land, is the trouble. Let them raise more crops, even if prices do go lower. We are protected from the foreigner, and I don't ask to be protected from the people of the

United States, who are our fellow-citizens. No, sir; not by any means. I have no personal interest in this. Where my sons are, they have irrigation there; they have irrigation rights. They have made themselves well off by their work, and I want to see all the territory in the United States settled and under cultivation. What is it for? What is it for? They want to get water; we want to get rid of it; there is too much here. For these reasons I oppose the resolution.

Capt. Foster: There is one point to which I would like to call attention for a moment. I certainly coincide with the views expressed by Colonel Brigham, and with the views expressed by President Thompson, but one gentleman who spoke against this resolution, was certainly misinformed as to one point.

The rates to be charged for water are regulated by the different States. It is like any thing else of that character. These syndicates and trusts which have been spoken of as making money on what they have invested, can only charge so much for the water they sell, and when a man buys the land he knows just what he has to pay. It is regulated by each State and with that price the general government has nothing whatever to do.

The question being demanded, the motion as seconded prevailed.

Mr. Fleming then read the next resolution, which was as follows:

Resolved, That we appreciate the action of the trustees of the Ohio State University in strengthening the departments of practical agriculture, horticulture, forestry, veterinary science, agricultural botany, chemistry, entomology, and botany, and that we especially commend the establishment of a short course in agriculture and the free scholarship offered therein.

A motion to adopt the above resolution was seconded and carried.

Mr. Fleming:

Resolved, That we thank those members of the faculty of the State University and the officers of the Experiment Station for their valuable assistance at farmers' institutes, such service being freely given without compensation.

A motion to adopt was carried.

Mr. Fleming:

Resolved, That we extend our thanks to the citizens of Wayne county for their generous donation to the Experiment Station, and that we urgently request the State Legislature to supplement the gift by such appropriations as may be necessary to make the Station abidingly useful to the great agricultural interests of the State.

Motion to adopt made, seconded and carried.

Mr. Fleming:

Resolved, That we cordially indorse Governor McKinley's recommendation to the General Assembly as to the canals of the State, and we recognize the fact that the trend of legislation in all civilized countries is in favor of water-ways as a means of communication.

Mr. Foster: I move the adoption of that resolution, and I would just like to say a word or two upon that subject. I think we are indebted very much to our newly elected Governor for the words he said in his message. Having been interested for some years in the matter of transportation by water, I know something of it. We do not yet know the fair value of the canal system of our State. In face of the talk about giving them up because they do not pay their way, we are met with the fact that the French government is securing slack water navigation by means of a canal with the River Seine; we are met in England with the fact that they are enlarging their canals; we are met in Germany and all the European nations with the fact that they are enlarging their canals. New York within the last three years has appropriated a half a million dollars to enlarge her canals, and in this age of electricity, as a motive power, we do not know what can be done with them, but as a sample of how cheaply things can be transported by water, I will cite one instance. There was a tow-boat left Pittsburgh this fall with, I don't know how many millions of bushels of coal, to go to New Orleans, twenty-five hundred miles distant; the cost per bushel of transporting the coal from Pittsburgh to New Orleans was two cents and a half a bushel. This is a subject worthy of serious thought, therefore, I am in favor of the passage of that resolution.

Seconded and carried.

Mr. Fleming:

8. *Resolved*, that good policy, as well as good morals, require that we discourage the sale of privileges at all our fairs of all games of chance, and all wheels of fortune, and all demoralizing shows.

A motion to adopt the above resolution was then made, seconded and prevailed.

Mr. Fleming:

9. *Resolved*, We again commend the State Board of Agriculture for their very liberal construction of the law relating to the farmers' institutes; we commend their course in this matter and pledge ourselves that no backward step shall be taken in this work, and look forward to the time when every section of the State shall be supplied with a cheap means of educating the farmers of Ohio.

A motion to adopt was seconded and carried.

Mr. Fleming:

10. WHEREAS, The official term of one of the trustees of the Ohio State University will soon expire, and it is desirable that the managers of that institution should be men in sympathy with the paramount purpose of the congressional grant on which it was founded, and the more recent grant for its further encouragement and support, namely, the teaching of such branches of learning as relates to agricultural and mechanical arts;

Resolved, That the Governor be respectfully requested to appoint to such vacancy some leading representative of the agricultural interests.

Col. Brigham: I wish to say a word on that resolution. Of course, we all understand that some years ago an appropriation was made by the general government for the establishment of a college where the leading branches are taught, which pertain to the agricultural and the mechanical arts. Such an institution has been established in Ohio. The farmers were not, for a time, entirely satisfied with the work of that institution for the agriculture of the State. But I am pleased to be able to say that in the last few years, since the farmers themselves have shown more interest in that institution and its work, considerable progress has been made in the right direction. I believe it is an institution that can do great good to the industrial classes of Ohio. I believe it will be our fault if we don't get much good from this institution. But I believe it is necessary that the Board of Trustees should be men in touch and sympathy with these great industries, and that we can not afford to have a board of trustees for this institution selected, as they are in other cases usually, from those who have graduated from the institution. They may be nice men, and all that; but we have now a board of trustees to look after this agricultural and mechanical college, notwithstanding the change of name—a board of trustees upon which there is not a single practical farmer. There is only one member of that board connected with or interested in agriculture. He is a splendid man, just as good as any farmer in the State could be, but I do believe that in the future the agricultural associations of this State should let the Governor of the State understand, and the confirming power understand, that we expect the controlling powers of this institution to have represented amongst them men who are in full sympathy and understand the wants and needs of the agricultural and mechanical classes of the State. For that reason I hope this resolution will not only pass, but that all interested will study carefully the work of that institution, to ascertain what it is doing and what it ought to do, and suggest ways and means whereby this institution can qualify boys and girls who desire to take advantage of the opportunities there offered and fit and prepare themselves to become successful in the fields of agricultural and mechanical arts. [Applause.]

Mr. Baker: I do not rise to oppose this resolution, but I wish to say that I know with an efficient board that institution can do good work. It has done good work and is doing good work; but under the present

system I don't see how it is. Now in discussing the irrigation question, Colorado was spoken of. They have a college there that has more money coming in from their lands than they hardly know what to do with. There is not a college in the United States better situated than that or with more money than that. They are now preparing to give \$5,000 to the president. They are in a most prosperous and substantial condition. They are under the control of the State Board of Agriculture. I am perfectly satisfied with the management of this institution as now constituted. I am satisfied that they are using every endeavor to promote the interest of the school. Still, at the same time, I shall vote for this resolution, for I think the agriculturists of Ohio should at least be recognized to the extent of one member upon that board.

Col. Brigham: This resolution does not ask for the removal of any body, but simply recommends that in the filling of the vacancy soon to occur there be a representative farmer placed upon the board, so that there will be at least one practical farmer a member of the board of trustees to represent the agricultural interests of the State. Of course no man personally cares for this position, but I think the farmers all ought to unite in recommending that this vacancy be filled by some intelligent, active agriculturist. My friend from Lorain county said a few moments ago that he was surprised to see an exhibition of selfishness on my part in regard to the irrigation problem. I want to say to him that I am getting "almighty" selfish for the farmer, and I want it understood that I am so. I think we have been too liberal for too long a time. I tell you, I think that we must be selfish and demand every thing that properly belongs to us, and see to it that our rights and interests are protected.

Mr. Wilson, of Madison county: Mr. President and Gentlemen: I am one of these quasi-farmers. I have brought all my family up as farmers. My only son is a farmer. I own some land myself and am very much interested in agriculture, but I am equally interested in the success of the great institution which has been established by the State of Ohio, and I shall regret the day when the farmers of Ohio become so narrow-minded as that they are not willing that the institution shall not only embrace agriculture but every department of learning incident to a great State and a great Nation [applause]; a university embracing all branches of learning; and I shall hail the day as a happy day indeed, when the farmer boys may go and be educated and return to the farm fitted for every place, any where, in any position in the State or national government. [Renewed applause.] I sat over there with a Democratic committee of this Senate, being the sole Republican representative upon that committee, when they were about to reorganize that institution; and I suggested to them that the State Institution had not a name character-

istic with the dignity and grandeur of the State, and they took occasion to change the name of that institution from the Agricultural College to the State University. I met my old friend Judge Jones when I walked out of the Senate Chamber, and he says "What do you think. They changed the name of our Agricultural College and are going to call it the State University." "Well," I said, "I don't know, Judge," and I walked on for fear he might find out I belonged to the committee which recommended the change. It was not intended for one moment to change the institution from the purpose for which the appropriation was made, but the purpose was to enlarge it and let Ohio have an institution as Michigan has, an institution to-day with a national reputation. When a farmer sends his boys up there, let it be understood, when the boys go there that they are to come back to the farm. That is where the trouble is. There is not a farmer here to-day if he sends his boy to college and educates him who does not find that boy when he comes back wants to be a lawyer or a doctor, or a member of one of the professions. I say we want to get rid of that difficulty and make the farmer as dignified, as learned, as able, as competent as any man in the land, Now, put a man in there, but don't put a narrow-minded, ignorant, uneducated farmer, who has no breadth of mind sufficient to grasp the importance of a more extensive education. Put an intelligent, competent, bright-minded farmer in and let him be able to hold his own along by the side of the other gentlemen of that institution, and then you will dignify the farmer, you will dignify the institution and make it an institution to be admired. I do not understand Col. Brigham to intend that the institution shall be brought down but that it shall be elevated. If so, I am with him. My farmer friends will say, "Oh, you are a lawyer and don't feel in sympathy with the farmer." Let them say what they please I look at it from the standpoint which I think is entirely liberal and which is certainly candid. [Applause.]

Col. Brigham: I am glad to hear the candid admission from my friend from Madison county. I have been seeking for a long time to find out how under the heavens that name came to be changed [laughter], and as a Republican I am glad that it was a Democratic committee that recommended it [more laughter], but I am sorry that it was a Republican member that made the suggestion. [Great laughter.] However it may have occurred, I believe it was a mistake. The name of Agricultural and Mechanical Arts should be quite respectable enough for an institution of learning. That has been the trouble all the time; the boys come here, and they expect to go back and become farmers, and they have to fight against the temptations which beset them to draw them from the farm into the professions. I remember many years ago, or not very many

either since I come to think of it, I sat at the breakfast table with a man who afterwards became president of Oberlin College, a Mr. Monroe. He was a very bright, intelligent young man and it was well understood that he intended to go back upon the farm after he had graduated from that grand institution of learning. I sat at the table while every individual there but myself, and I kept still for I was one of those poor farmer boys of Medina county, and I heard them argue with that man and ridicule him and bring all possible pressure to bear upon him against the idea of an educated man, a college graduate, going back and becoming a farmer, and I thought he was a fool just like the rest of them. Because I was a farmer's boy then and a little ambitious, and I had been very poor all my life and had a hard time, and I thought any man or boy that had good sound sense, who would make up his mind coolly and deliberately to follow a farmer's life, ought to be sent into an imbecile asylum or somewhere else. That feeling and sentiment illustrates the trouble that has existed all these years with the boys of the farm, who are just as ambitious as any boys that can be found in our land. They get the idea instilled into their minds and fixed there early in life, that if they wish to be anybody in this world, if they wish to occupy positions of honor and distinction, they must abandon the farm and pursue some other avocation in life. Our system of education has encouraged that false sentiment. The old school directors who used to come in and talk to us little boys would say "Study hard, study hard" "What for?" "So that you will not be hewers of wood and drawers of water always, so that you may yet make a living by beating fellows that work with their hands." That was the idea; that was the impression conveyed. Even the farmers themselves gave out this impression.

Now, then, one of the prime objects and purposes of this establishment and this institution was to correct and counteract that feeling and so change the trend of public sentiment as to teach the boys that not only those that live on the farm and that are born in the homes of mechanics, but also the boys in other walks of life that have a taste in that direction—to teach them that this avocation was just as honorable and just as respectable as any in the land. That was the prime object and purpose for the foundation of this institution, and it was given this name with that end in view. It can not be claimed that the farmers of Ohio consented to that change, because the gentlemen could not have done that now. Oh, no, no committee would dare to do that or try to do that under the existing circumstances. We find then that this name "The Agricultural and Mechanical College of Ohio" was not quite dignified enough for this great institution. I think that was a grand mistake to change

that name. I don't want any narrow-minded, contracted, ignorant farmer sent there, but I would rather have a man that could scarcely write his name, with a heart large enough and a soul big enough to understand the wants and needs of the farmers of Ohio, than to have the most brilliant and best educated man in the country. I tell you there is an atmosphere surrounding this institution which tends to drive the boys from the farm and very few of them come back. It has been a hard battle in that institution to permit the boys to come here with the purpose of getting an education which will help them in their life-work as farmers; it has been a hard matter to keep them there and make them feel at home, because the other fellows, the boys from the town, who expect to be great lawyers and prominent men called them "hay-seeds." And when the students have been discussing the subject in regard to the college they would be told "Let it be understood by the farmers of Ohio, that this is no Agricultural School but a great University." That is what they tell us; that is what they told us farmers within the last three years, some of the students from this institution. We don't like it. We don't want to see a narrow-minded, contracted man in that place, but we want a man who will use his influence and power along with others of that board in seeing that the interests of the agricultural industry of this State are protected and that a reformation is made in the right direction. They have learned something in the last few years. They have found that the farmers are waking up a little and are paying more attention to it. The farmers are willing to help the institution whenever the institution will help the farmer. They are doing a good deal better, but I tell you there ought be on that board at all times, a representative farmer, a man connected with the agricultural and mechanical industries of a great State. Certainly we can find a broad-minded man, we can find a man of mature years, that has had the advantage of ripe experience and is in sympathy with the farmer. We may find a man in the State who has had to battle with poverty who is familiar with the hardships of pioneer life in Ohio; we may find a man of that character without much education, and a man who can comprehend the wants and needs of the farmers, and who may in the course of his life have felt the want and need of education. They may appreciate the advantages of such an institution perhaps, more than some man who has gotten an education which cost him nothing, but whose father was able to pay for any thing he needed or wanted.

Now, I say, I hope this resolution will be adopted, but I don't care so much about that, I don't care so much about the mere adoption of this resolution, as I do to see the farmers who are represented to-day in this assembly take a greater and deeper interest in this great institution. I don't know whether it is wise or not to extend it in the direction in which

the gentleman suggests. I doubt it very much. How is it with reference to the Michigan University of which I hear so much about? They have a grand institution there, but what else have they got? They have got one of the grandest Agricultural and Mechanical Colleges there that can be found anywhere, and a college that is run very closely along the line that should be pursued by an institution designed to promote the interests of agricultural and mechanical arts. The farmers are well satisfied and contented because they are provided for. They are not jealous of the other institutions because they know that their wants are well cared for. It may become necessary possibly some time in the future for the farmers and mechanics of Ohio to demand that this institution be turned over to one or to go back to the other. I say it may be possible. If we can't get what we want from a great university that is expected to turn out men fitted for the great professions and other walks of life, then I say that this may be possible. I don't know. But we can't tell what the future may bring forth. As a farmer I am not willing to loose that institution and that grand gift from the nation to the farmers of Ohio until every effort has been expended to hold that institution to its legitimate work, which was to foster and promote those branches of learning that pertain to the agricultural and mechanical arts.

Now, we have some very narrow-minded, some very contracted and some very ignorant men among the farmers of Ohio. I know that is so; but I am glad that we have an institution where the boys of these men may be permitted to go and get a better education and come out a different man, perhaps, from their father. But I don't want them to go there in an atmosphere that will make them feel all the time as if their profession was not so desirable, was not so dignified, as that of the attorney, the doctor, the manufacturer or the merchant of our land. If that sort of atmosphere surrounds that institution, if they use the great power which they possess not only to get these boys and girls to come up from the farmers' home, but to discourage labor and make our people understand and feel that men willing to work with their hands are not quite as good as the men who follow other pursuits in life, then I say it is time to call a halt. I would like to have an atmosphere surrounding that institution which would tend to dignify labor and make the boys and girls from the farm understand and feel that any body who is willing to work with his hands is the peer of any man in the land. I would like to have that sort of atmosphere around that institution. I would like the boys and girls from my farm or from your farm to feel that theirs is just as respectable a calling or avocation as that of any other man in the land. I would like them to feel that they can hold up their head and say that "My business is that of a farmer, and that any position can as

well be open to them following that avocation as if they followed any of the professions." I would like to have them feel that way, and that is what we are working for. [Applause.]

Mr. Wilson, of Madison county: Mr. Chairman and Gentlemen: If I have succeeded in puncturing this lazy body into a little life, I am very much pleased. If there is any one thing that is distasteful to me it is for a lot of men to get together and vote through a series of resolutions without knowing whether they are in favor of or against the resolutions.

I don't disagree with Col. Brigham at all on the main proposition. I assert the truth to be that the great men of this nation from its beginning down have been sons of farmers. I take pride and pleasure in saying that my father was a farmer, and that he lived and died such. I am not ashamed of it, but I am ashamed of a good many farmers that are lazy, slothful and ignorant. They are not all that way. I am ashamed of some farmers' sons because they have no energy and no desire to push ahead in the world. If I had a son who would want to leave college because they called him "hay seed," I would say that they ought to harden his head, and that he must show more pluck or he will never be a man. I would plunge him in and let him swim. If there is any thing in him, he will come out on top; if there is not, he will go down as sure as death. That is what I want to do—make the farmers the very best men in this land, so that wherever they may be, or wherever they may go, they will be the peers of any other men. I have no great respect for the professions, except as the men who are in them come to the front or at least attain respectable rank, for the professions are full of useless men who can scarcely make a living from day to day. I would keep the boys on the farm; but instead of dragging our institutions to the lowest level, I would bring the boys up to a higher level and make them farmers, and then they will always take care of themselves.

Now, as to this institution; just put into it a little more vim. Farmers, put in one of your best educated men like Col. Brigham or some other man who has a mind that can grasp the situation and then put together all the leading professions and occupations, and make that the great university of this country, and make your students in the agricultural department the equals of any other department, and don't send them back home belittled as if they never could appear as the peers of the gentlemen educated at the literary institutions of this country, and make them all scholars. Let it be understood that the farmer may be a student and a scholar as well as the lawyer, the doctor, or the merchant. When you have done that you have my ideal of an institution designed for the promotion of the agricultural and mechanical arts. [Applause.]

Prof. Lazenby: I want to express my appreciation of the discussion that I have just heard. It has interested me very much, but there was one idea, however, advanced by Col. Brigham, that I feel called upon to oppose, and that is that there is something in the atmosphere of the institution that draws the boys away from their interest in agriculture. I tell you, gentlemen, the atmosphere is right on the farm and right among the farmers and not at the institution; and we can show this by this fact that there are more students who come to the University and don't attempt to take the agricultural course and who change and enter that course afterwards then there are who come to take the agricultural course and afterwards leave it for something else. I know there are very few boys who come to the University and want to take the agricultural course, but we are constantly receiving accessions to the agricultural department from those who enter in other courses, and after having been at the institution some little time, change to the agricultural course. Now, I maintain if there was such an atmosphere as suggested against it, there would not be a result like this.

Mr. Ellis: Mr. Chairman, I would like to take a few moments of your time. I am afraid the drift of this resolution will be misunderstood somewhat. Now, I knew nothing of the resolution until I heard it read, but I have talked on that line considerable, for I served nine years on the Board of Trustees of the University. I was put on by Gov. Bishop when the name was changed from the Agricultural College to the Ohio State University, and I know something about its workings and its objects and purposes. I do not understand that the resolution is making any drive or aim to make any complaint of the present Board of Trustees of the Ohio State University as managed at the present time, but there is just this—I am glad the resolution is up; it is right in the line of what I have been talking about for a considerable time. Col. Brigham and I have talked about it a good many times. There has been a demand on the part of the alumni as in other institutions, that the alumni of that institution should dictate as to who shall go on the board of trustees. Ordinarily, I believe such a demand is legitimate and right, but in this case I believe such a demand is not right and should not be tolerated for this reason: As has been said, the foundation of the grant was, that the industrial classes might be educated in their pursuits. Consequently, the leading branches, especially such branches as related to agriculture and the mechanical arts are taught, putting agriculture first of all. But this clause was inserted in the bill in Congress in getting it through: "Not to exclude others." There was a permission that Latin might be taught, and Greek might be taught, and Hebrew might be taught and any other nonsense might be taught which was desirable. As a matter of fact the

graduates in that institution—and it is the best institution I know of to graduate from to make finished men or women—of the graduates from that institution, I understand ninety per cent. are in the classic courses. Is that right Capt. Cope, or is that too high?

Capt. Cope: I think you are too high; it is a much smaller per cent.

Mr. Ellis: How much?

Capt. Cope: I don't know. I see Mr. Baker over there who is one of our seniors, and probably he recollects the percentage better than I do. I answered as I did because when you asked the question, I saw him shake his head.

Mr. Ellis: And you shook your head because he shook his [laughter]?

Capt. Cope: No, but I could not now state the exact per cent.

Mr. Ellis: How many graduates—I am not bringing this up to criticise the institution—but how many graduates in the agricultural course in these eighteen years have you turned out? Four or five or six during the time. Now, the point is this—the original design of that institution was for the education of the industrial classes of Ohio in their pursuits. The alumni of that institution or most of them—the large majority of them—are not what is termed the industrial classes of the State. They are making grand men. They go into the legal profession and the medical profession, and they make the best lawyers and the best doctors in the land, but they are going into something foreign to the agricultural and mechanical industries. Consequently, when the alumni go to dictate to the Governor whom he shall appoint, the majority will say “One of these fine classical students.” Consequently, the man comes and takes charge of it, and thus the institution is diverted into a channel foreign to the industrial classes. This institution is an exception to the rule governing other institutions of learning. The industrial classes of the State were pledged to the government of the United States, and pledged to each other, and pledged to God Almighty that it should be kept in the line that it was intended to be kept in, of educating the industrial classes of the State in their pursuits. We must educate the farmer, so that he can make an intelligent farmer; educate the mechanic, so that he will make an intelligent mechanic. Not educate him out of his pursuit, but educate him in his pursuit. A good many of them do that, but it is their fault and not the institution's. So far as I know, there are good men on the board of trustees, but the tendency is to get it from under the control of agricultural and industrial classes. Now, if it is ever kept there, it has to be kept there by this body, the men that represent the agriculture of the country in organization, and it is proper and right that it be brought up here and discussed. We want, not a narrow minded man, but a man of broad, liberal views; a man that seeks

to promote the interests of and elevate the farmer, remembering all the time that underlying and surrounding this institution is the fact that it is for the industrial classes of Ohio—especially just now, since our Legislature last winter granted that magnificent bequest to the institution of one-twentieth of a mill, making a vast amount of money, to be added to the increasing thousands coming from the government, \$19,000 or \$20,000 now, and which is to be steadily increased until it gets to be \$25,000 a year.

Just one word about the change of that name. You know the Legislature that changed the name was a democratic Legislature, but the next year, as is usual in Ohio, the democrats were out and the republicans in, but there was one democrat sent back; and as we wanted some appropriations from the Legislature, we were on hand bright and early doing what we could to advance the financial interest of the college. We labored with this democratic member persistently to convince him that he ought to favor a liberal appropriation. He said: "God helping me, I will never vote for a dollar for the institution until its name is put back where it belongs." We went to look up the record, and found that on the yeas and nays he voted yea on changing the name. [Laughter.]

Col. Brigham: I wish to say a word in explanation. I do not mean to have it understood that I find any fault with the atmosphere of that institution. What I intended to say was that we did not want that kind of an atmosphere around the institution. Not that it did surround the institution, but that we did not want it to surround the institution.

The question being called for, the resolution was adopted unanimously.

Mr. Fleming:

11. That the thanks of this Convention are due to the Sergeant-at-Arms of the Senate for his attention.

Adopted.

Mr. Fleming:

12. That in the death of Major B. W. Carlisle, President of this Board in 1879 agriculture has lost a true friend, the State a good citizen.

The Chair then called for a rising vote on this resolution, which was adopted unanimously.

Mr. Cowden: I have an additional resolution which I want to offer:

WHEREAS, A Superintendent of the Swine Department of the Columbian Exposition will be appointed by Director-General Davis of Chicago; and,

WHEREAS, We desire to have a competent man, identified with swine growing, appointed to this position; therefore,

Resolved, that this Convention recommend, Mr. S. H. Todd, for the position of Superintendent of Swine at the Columbian Exposition.

If you will bear with me one moment, I want to make a little explanation in this connection. Mr. Todd has been recommended by quite a number of associations of swine breeders in the State, and Mr. Bonham also has been recommended, and our Annual Institute has recommended Mr. Bonham for that position. Mr. Bonham very generously prepared this resolution, favoring Mr. Todd, and he asks this Convention to adopt it as the sense of this Convention, and I therefore move the adoption of the resolution as read to you.

Motion seconded, and carried.

Mr. Bonham: Mr. President, if there is nothing before the Convention, I would like to announce that the railroad certificates are ready for distribution. We have received the adequate number, one hundred, and by calling at the desk you can receive them at the close of this session.

A motion to adjourn until 7 P. M., was then carried.

EVENING SESSION, *January 14th, 1892.*

The Convention, after being called to order, was addressed by President Black as follows:

The first thing before the Convention to-night, is the election of five members of the State Board of Agriculture. You will notice that there are seven names upon the tickets; the delegates will please prepare their tickets by marking off two names, leaving five unmarked names upon their ticket, to constitute the five members voted for by them. I desire to appoint as tellers Mr. C. Rosenbush, of Butler county, and Mr. T. S. Morris, of Geauga county.

Printed tickets were then distributed through the Convention, and as the Secretary called the roll, each delegate came forward and placed his ticket in a receptacle in custody of the tellers.

After each delegate had cast his vote, President Black announced the vote as follows:

President Black: 48 votes cast; necessary to a choice 25.

J. W. Pollock, Green county, 46.
N. Ohmer, Montgomery county, 41.
E. L. Hinman, Franklin county, 43.
G. W. Glover, Harrison county, 21.
M. A. Rosenbush, Carroll county, 16.
Chester Bordwell, Clermont county, 37.
F. A. Derthick, Portage county, 31.

Messrs. Pollock, Ohmer, Hinman, Bordwell and Derthick are the five members elected. [Applause.]

The Chair: The next thing in order is a paper from Mr. Kling, on the subject "Special Attractions and Sale of Privileges at Fairs." Mr. Kling, on account of sickness in his family, is not able to be here; but his paper is here, and will be read by the Secretary.

Mr. Bonham: Mr. Kling wished me to say to the Convention that he wrote this paper in great haste, and while sitting up at nights waiting upon a sick wife. But his name was on the program for a paper, and like he usually does, whenever a duty is assigned to him, he performed it to the best of his ability. [Applause.]

Secretary Bonham then read Mr. Kling's paper which was as follows:

SPECIAL ATTRACTIONS AND SALE OF PRIVILEGES.

There is a diversified opinion among fair-going people, so well as fair managers, as to what is a suitable attraction for fairs, proper in its character, and drawing in its effect. Some see attractions in that only which appeals to sight, or to the pockets of men, while others see greater attraction in that which amuses, which touches the mirthful side of man, the operation of which excites admiration, pleasure and enjoyment, and thereby impels those who seek amusement merely, as well as people generally to attend fairs.

In proportion as the managers of fair associations succeed in making their annual exhibition attractive to the amusement loving and pleasure seeking, as well as useful and profitable to the profit making part of mankind, they will succeed in securing the presence of the former as well as the attendance of the latter, the two constituting the masses—the principal source from which the income of fair associations is derived. Now, what will bring about this desirable result, has ever been in the past and probably always will be in the future, a hard problem to solve. In my opinion you must have more than mere good horses, cattle, sheep, swine, poultry and the products of the farm and shop on the fair grounds to make the fair a financial success. These things are absolutely necessary, and will command the presence of a class of persons who devote 365 days in the year in making money, and who attend fairs chiefly for profit, but the masses from whom fair associations receive the bulk of their income, come not for profit, but for recreation and pleasure. They leave home to rid themselves of money-making cares and thoughts of that character, for the purpose of enjoying themselves a few days in the year, as a holiday vacation, in recreation, mirth and pleasure. While this class of persons will take a bird's eye view of the horses, cattle, sheep, swine, poultry, farm and shop products, they will want something of a more exciting and entertaining character. Place 1,000 persons, who visit fairs, around a show ring in which any of the foregoing named animals or articles are on exhibition, and let some one announce that Palo Alto, or some other equally famous trotter is now on the track and will contest the speed of Maud S, the Queen of the turf, how many will remain looking at the best horse, bull, sheep, pig or pumpkin in the State of Ohio, or elsewhere, or any other article or animal usually on exhibition at fairs? Possibly a baker's dozen, but no more. So the speed ring comes in as a very formidable factor in fair attractions, and ought to be well provided for by fair managers in the way of making special inducements to secure the attendance of the speediest and most noted horses on the track, as well as to foster and encourage the young and yet untrained ones.

At the last fair, the net income of the Ohio State Board from the speed classes over the premiums paid for the same class, was about \$2,000; that is, the Board received about this sum more from entry fees in this class and from the sale of grand stand tickets

than the amount paid out for this attraction. This, then, was not only an attraction to draw and entertain the public, but was also a profitable one to the Board.

Fair managers, ought also to provide other innocent amusements. Chariot racing was a drawing amusement for some time, so also was the Knights of Ivanhoe, and the 10 miles running races, with change of horses each mile.

These amusements have been in the past, very attractive, and entertaining to the people generally, and correspondingly profitable to fair associations.

The merry-go-round, and many other amusements of like character, that are innocent and harmless, but entertaining to the children and to those of more matured years, are attractions of an entertaining character—do no doubt draw a large class of visitors, that would otherwise not come. It is the young and middle aged persons, that mostly attend fairs, and make them a financial success.

Be it remembered that the admission fee to the grounds is not the only source of income accruing to fair associations by reason of persons being drawn there, by the attractions on the grounds—but the money received from the sale of privileges is a source of large income.

Privilege men will pay more for a privilege when the fair ground is well filled with pleasure seeking people, than when only a few of the profit making class are present. A privilege man would rather pay \$500 for a privilege, than \$100 if the number of people on the ground will warrant him in doing so. Thus the revenue of fair associations is largely dependent upon and affected by the attractive features.

The sale of privileges is a subject for which there is no fixed rule. Sales are sometimes made advantageous by public auction, sometimes by sealed bids, and very often by private negotiation. The latter is the mode the State Board has adopted in late years, and I believe it has been very satisfactory. It depends largely upon circumstances and surroundings.

I do however know, that when it is understood and generally known among privilege men that this fair or that fair has a very large attendance, there is no trouble in selling the privileges for a very high figure, without any special mode of sale.

The foregoing is sufficient to open the discussion on the subjects submitted, to wit, "Fair attractions and the sale of privileges."

President Black: It is expected, gentlemen, that this paper will be followed by discussion. If any member of the Convention has any thing to say upon this paper, we would be glad to hear from them now.

Mr. Morris: There are a great many who attend fairs that like to see and enjoy innocent amusements, and which is perfectly proper. What I had in mind, in speaking this afternoon, is the triple fortune-wheel and other gambling devices, and games of chance, which have a demoralizing tendency, and which I would like to see stopped all over the State. Any thing that is mirthful and innocent in its character, I have no objections to. But other than that, I would like see all games of chance, wheels of fortune, and like gambling devices, excluded from our fairs, and believe in the long run we would all realize that from a financial standpoint, it would be better to keep them out entirely.

Mr. Park, of Lake county: I would inquire of the gentleman where he would stop his games of chance. Would you keep out cane racks, knife boards and such innocent amusements? Certainly they are games of chance. I would like to know where he would draw the line?

Mr. Morris: I think they are games of chance.

Mr. Ruhlman, of Mahoning county: I beg leave to disagree with Mr. Morris, as to where we would draw the line on so-called games of chance. For instance, a cane rack or a knife board—I would not for a moment, consider that that is a game of chance. At our fair in Mahoning county, we look upon a game of chance of that kind as a game of skill rather than chance. While there are lots of other things of a similar nature that perhaps a great many of our people would feel like barring, we console ourselves with the idea that a great many things of that nature are games of skill, and they make us the mighty dollar.

President Black: What is the further pleasure of the Convention?

A vote of thanks was extended for the use of the Senate Chamber when the Convention adjourned *sine die*.

PROCEEDINGS

OF THE

Institute of Stock Breeders and Farmers.

CITY HALL, COLUMBUS, O., TUESDAY, *January 12, 1892.*

MORNING SESSION.

The Institute was called to order by the President, Mr. Levering, who said:

The first exercise on the programme is an address of welcome by the mayor of the city, Mr. Karb.

Whereupon the President introduced Mr. Karb, who spoke as follows:

MR. PRESIDENT AND MEMBERS OF THIS ASSOCIATION: I was notified by your worthy Secretary, and by this programme, that I was to appear here before you this morning, with an address of welcome. I am indeed very much pleased to meet you, and to have the honor, as the Mayor of the city of Columbus, of coming before you and extending to you all a most hearty welcome.

As I have been in the pill business about seventeen years, I do not know that there is any thing particular I could say that would interest you. I really don't know any thing about farming or stock breeding, sheep husbandry, or any thing of that kind, but I do know that I never have made an address of welcome to such an important body of men, a body of men whose interests are of such vast importance to this community. But it is a little late, later than the call has been made, and I do not know what excuse to make for the members not being here on time this morning. We had an interesting time in our city yesterday, as you well know, and I could have found some excuse for them had it occurred then. I welcome you in the name of every good citizen within our beautiful and prosperous Capital City. In the name of all good men, honest and true, we will turn the city over to you for the balance of the week, hoping you will make the best of it. Thank you.

The President: On behalf of the stockbreeders and farmers of the State we return thanks to the city of Columbus, and its representative, the mayor, for the welcome given us, and we hope that in the prosecution of our business it may be done in such a manner as to reflect not only credit upon the farmers and stockbreeders, but shall be a credit to the capital of the State of Ohio. As we are behind time, I deem it unnecessary to make a long speech, or take your time from other things which we are here to discuss, so we will proceed at once, as we are late, with the programme.

The first paper is—"Poultry—a Neglected Factor of Profit in Mixed Farming," Mr. Henderson.

I don't see Mr. Henderson here; is there any one to report for him? [No response.] Or Mr. McClave? Will he say any thing upon the subject of poultry? There is no response from that direction. What is the pleasure of the meeting; shall we pass to the next?

Mr. Bonham: Mr. President, I have n't heard any thing from the gentleman who was to give us a paper on poultry; I have n't heard any thing from him at all. I suggest that we pass on to the other topics, and if he comes in we will give him a place on the programme.

The Chair: The next paper is "The Pig for the Farmer and How to Produce It," by Mr. Coler. Is Mr. Coler present? [No response.]

Is Mr. Coulter, of Delaware county, present? [No response.]

What is the pleasure of the meeting? Shall we pass that subject? Any one know any thing about it?

Mr. Bonham: Mr. Chairman, these gentlemen don't seem to be present; I don't know the cause. I don't know whether Mr. Ellis is here or not, but if Mr. Foster is in the audience I move we pass on to the next paper. I had a letter from Mr. Ellis saying he was down with the "grippe," but he would try and send his paper down here and have it ready for us in time; the paper has n't come. I understand Mr. Foster is prepared to discuss the subject. I move he take the time.

The Chair: Mr. Foster will please address the audience on the subject of "Soiling vs. Pasturing."

Mr. Foster: Mr. President and Gentlemen: I am sorry that Mr. Ellis is not here, for the soiling system is a very important one. I have a few lines with which to open the discussion.

PASTURAGE.

By WM. S. FOSTER, URBANA, OHIO.

All thoughtful farmers realize the importance of a good supply of grass for pasturage and hay. He who can produce the greatest yield upon his land will be the most successful, yet this is a subject that is sadly neglected.

In our country we have many climates, many kinds of soils, many geological formations, many degrees of aridity and moisture. It must be apparent that one species of grass can not be equally well adapted to growth in all parts of so great a territory, yet hardly a dozen species of grasses have been introduced in our agriculture. This number answers with a tolerable degree of satisfaction the wants of the greater portion of the country. All grasses we have in cultivation were once wild, and are still such in their native homes. The selection and cultivation of particular kinds of grasses with reference to their superior grazing qualities and the greater production of hay is however a comparatively modern practice. In the early history of this country in the northern States, the natural pasturage was abundant and the natural meadows and marshes furnished a supply of hay for winter feeding.

The grasses must be discussed from the standpoint of a mixed husbandry, and from that of the grazier. How long land should be allowed to continue in pasture or meadow will depend very much on circumstances.

Unquestionably the best plan for farming is the practice of mixed husbandry, a mixture of raising grain and fattening domestic animals. By this method a rotation is necessary, the fields are alleviated, the productiveness of the land is assured, crop failures become rare. In the practice of most farmers, meadow lands are seldom continued more than three or four years, without the change to the plow. Pasture lands of the cultivated grasses are undisturbed for a longer time—usually plowed up on the indication of a failure to produce remunerative crops, accompanied with the growth of many weeds. As a rule there is the same benefit to be derived from the proper drainage of grass lands that is apparent in the lands devoted to other crops. The selection of the proper kinds of grasses to be employed for meadows or pastures must depend on many circumstances such as soil, drainage, habit of growth, production and end in view.

An observing and progressive farmer should introduce new kinds of grasses, but with due caution. It is only by such means that progress and improvement are made. The farmer and grazier should always bear in mind that the pasture should be adapted to the kind as well as the quantity of stock he keeps. Cattle, horses and sheep are very different in their feeding habits; cattle require the grass long and luxuriant in its growth; horses and sheep delight in short but sweet grass. Judicious management of the stock upon the pastures will give the best results. Care must be observed that the stock of the farm is not turned upon the pastures too early in the spring. Time should be given the young grass to have made a good growth. Sheep are the most destructive stock to turn out too soon, as they will eat the heart out of the grass and destroy it.

It is a nice question to determine when to take the stock off the pastures in the fall. This will depend upon the season. Should the stock remain upon the pastures too late in the fall, the grass will be injured very much by their tramping and breaking the sod. With the very evident increasing tendency in our country to periods of drouth, it behooves the provident and careful farmer to have some supplemental feeding crop, to supply the deficiency of food for his stock—a small field of fodder corn or sorghum are among the best for this purpose. In mixed farming a variety of grasses with clover should be sown and an abundance of seed used; then can be sown for meadows and pastures, blue grass, orchard grass, timothy, red top, rye, grass and clover. These can be sown with or without grain. Some means that will add to the productiveness of meadows and pastures are rolling in the spring, and harrowing at time of sowing some seed upon all thin places—a top dressing of fine well rotted manure when it is to be had is of very great benefit.

The permanent pastures of the country are in the main made up by the native grasses. The most nutritious and valuable variety of them is *Poa pratensis* or blue grass. This is to be found in the east, middle States and the Ohio and Mississippi valleys. In all of them it is indigenous. As a rule our pastures receive but little care; no crop gets less attention, yet none would better repay all outlay. No doubt double the product could be realized with a little more care and attention. There is no valid reason for failing to give better treatment.

Pastures should never be grazed too close early in the season. Should the roots be exposed to the hot and dry weather of the summer, it would result in serious damage. Some fall growth is necessary to give the plants strength for a good start in the spring. Many farmers do not manage their pastures to the best advantage. They are anxious to see all the pasture eaten close, seeming to fear if it is not consumed they will lose making some beef or getting some milk. A little grass left upon the pastures in June should not be a source of any anxiety. During the period of drouth in July and August the growth of grass is not sufficient for the stock.

I have given but a few hints upon this very valuable product of the farm, but enough, I trust, to induce some of my audience to give this important subject more thought, and a better practice in the future management of their grass lands.

The President: Any remarks upon the paper just read? I hope there are some gentlemen here who will discuss the subject.

Mr. Bonham: Mr. President, I think that the subject is one of the most important with which we have to deal; and the question I have found in my experience is, how to keep up the supply of grass all through the season? The suggestion of the Captain that in order to prepare for the shortage that comes along in August and September on our pastures, we should have fodder corn, is a good one. But I believe that there is a better way than that even. The question of labor is a great problem with us on our farms. I have tried this experiment: I find that blue grass pastures, after July is over, become very woody in the stalk, or totally depleted, especially if you have six or eight weeks of dry, hot weather, as we do in southern Ohio. In order to obviate this difficulty, I have tried orchard grass. I sow orchard grass in the spring. I find I can get a better stand by sowing in April or May than in the fall of the year; that is, orchard grass. By cutting it along in June, you have got a rich, strong grass that is at its best. That is when the blue grass is short. Don't turn into the orchard grass until after you have taken off the seed, then you have good grass to pasture with, and you will find that the cattle like it. And I found from the first that I gratified the horses and sheep; they liked that better than any thing I had on the farm in November, and they ate it down so close right into the ground fairly; that was a severe winter. I have learned that the proper thing to do is not to fodder until severe weather comes. Now I find this, that by sowing the orchard grass and leaving the blue grass standing in there, I have in the early spring, or in the late fall, an excellent blue grass pasture; a blue grass pasture that has grown up and fallen down. I have the orchard grass as a grand storehouse for good feed, and our animals have more need of this in the severe weather, and it is a God send to the stock, and I would recommend farmers to give some attention to the production of orchard grass. When I sow clover, I always sow orchard grass in with the clover; I think it pays well if the clover is used for pasturing cattle, horses and swine, as most farmers do from the first of October. They pasture all kinds of stock. The orchard grass fills up the vacant space, and is a most valuable adjunct in the clover field. More than that, if you intend cutting it for hay, the orchard grass is rich and strong, and it helps to keep the clover; and I can make a better quality of hay in sowing it on the same ground.

I want to say this in behalf of orchard grass, and to call my friends' attention to it. I don't think, as a rule, that farmers sow a large quantity of grass on their ground. We can have a great number or varieties of grasses growing in the same pasture, and keep all the ground occupied. It gives a variety of feed at stated seasons. I have sowed it with timothy.

The blue grass alone is not the most profitable pasturage. It don't furnish as much feed as orchard or mixed grasses. I don't want to occupy all the time.

A Member: What is the proper time to sow orchard grass?

Mr. Bonham: I think when the weather gets warm, along in April or May. I get a better stand in the middle of April or May. Rather risk it then than to sow it in the fall or February. I have had better success at that time.

A Member: How much do you sow to the acre?

Mr. Bonham: Not more than two bushels.

A Member: Two bushels along with the clover?

Mr. Bonham: No. When I sow clover I sow about half a bushel; some farmers think it costs more to seed down with clover, but it pays. It pays to cover our land with grass.

A Member: Mr. Chairman, I indorse what Mr. Bonham says about orchard grass, only there are one or two points he has left out. There is a grass that grows all to blade, like tussock grass. I have been in Virginia and I was surprised to see as perfect lawns as they have of blue grass, and I asked those people about it, and they said that they put on seed, nearly the same allowance of orchard grass as clover. You want to put in not less than two bushels. There are quite a number of grasses other than he gave. There is the mellilot clover that is often very valuable. This comes from the South, Maryland and Virginia.

A Member: Mr. President, I would like to ask what the preference is in a woody place—shady place—for sowing orchard grass or blue grass?

Mr. Bonham: I would rather have the blue grass. Of course I think orchard grass will do very well in the shade, but with blue grass it makes very little difference. I find the blue grass does well in the timber. Sown in a locust grove, for instance, blue grass will make an admirable growth, but I can't get a good growth in an oak grove, or beech grove or sugar grove; the trees are so thick that the blue grass don't flourish very well. I want to add a word to what Captain Foster said about the danger of blue grass or orchard grass growing in tussocks. I find on my farm in low places, where it is very rank, there is a tendency of orchard grass to grow into clumps, or tussocks, fifteen inches in diameter, and on black land, such as the Mad River valley, all grass runs into tussocks; but on clay land or timber land that is not too rank I think that the orchard grass is very profitable pasture, and on clay land that is of average strength, if you put two bushels or two and a half, you will not be troubled with tussocks on them. I would sow one time blue grass and then again sow timothy and orchard grass, but the orchard grass will hurt this young Kentucky blue grass on such land. I sow two patches each year, a patch of blue.

grass and orchard, yet each time the stock takes the orchard grass rather than the blue grass—they would take it in preference.

It is a difficult matter to sow the seed when there is much wind, or really when there is any wind at all. The most successful way is to throw it from the fertilizing attachment of the drill. I got a perfect sowing in that way. I was determined to have it, so I sent the man to the barn and he brought the drill and filled it with seed and set the drill going. This can be used successfully.

A Member: Mr. Bonham, have you had any experience in saving seed?

Mr. Bonham: I have had some, but I don't remember just how I saved it. It was a small field of nine acres. I wanted the seed and I suppose I had a lot, but I didn't know much about it at that time. We cut the seed with a binder. I found a twine binder a good thing. I sent and got a small binder of a neighbor for this purpose, for I didn't have a small one, and set it up, but we didn't get it all in before a rain came up; we didn't get it in for three or four days, so I lost a great deal of the seed. But there is no trouble in harvesting. Capt. May, of Kentucky, who had extensive pastures, harvested his with a twine binder in June, not letting it get too ripe. It ripens very rapidly. He threshed it out with a threshing machine. He told me he had one field for seventeen years and cut it in June each year, and he thought his average from seed would amount to from twelve to fifteen dollars for seed. Now then, he claims the pasture he cuts from the last of June to last of October was worth as much as any other pasture he had on his farm.

A Member: How would it do to sow your orchard grass with oats or any grain?

Mr. Bonham: I don't know that it is the best for it; there is too much foliage—it shades the ground so much. I never tried it, but I usually harrow my wheat—well along in April when the ground gets plastic.

A Member: Mr. President, the Secretary spoke of sowing grass seed with clover. How long would it be until the grass would kill the clover?

Mr. Bonham: When I said in the clover field I intended to imply in the second year, but I don't think it would kill the clover at all. I have had in seven years just about as much clover as orchard, especially on the best part of the field.

A Member: I understand as you gentlemen sow with the clover you expect to mow.

Mr. Bonham: Well, if I intend to mow the clover I always sow

orchard grass with it. I think it of great value to sow them both together; if I want orchard grass pasture sow with of clover, all good seed.

A Member: How long would you advise leaving the crop stand?

Mr. Bonham: Well, it depends upon circumstances. If you want to keep up pasturing let it stand as long as you want.

A Member: I have tried orchard grass with oats two years, and found it wouldn't do. The orchard grass comes on so slowly it eats it out.

The Chair: Any thing further upon orchard grass?

A Member: I agree with Mr. Bonham about orchard grass for the purposes of pasturing. You can keep up a meadow, if you take ordinary care of it, five years. You will have to plow it under. A meadow that is well taken care of will last for years. I go over mine with a harrow, and give it some manure. Just as people do with wheat.

Mr. Foster: You, most of you, or a good many of you, remember Mr. ———. I intended to have brought a bunch of grass called alfalfa, brought by a friend of mine who is a member of the society lately organized there in southern California, and papers on the subject containing information which I think worth trying. We think in this State that the ordinary red clover fills the bill. I don't know whether it does or not. These are all matters to be tested.

A Member: I tried a little of this grass in California, but it didn't do very well for me. I had it on low ground, however; but one of my neighbors put it on clay ground and it did better.

Mr. McGuire: I have a field of about four acres that is wonderfully poor, and it is covered with stunted grass. Now could I by covering that slightly with manure, and by going over it with a harrow, could I get it to grow this orchard grass? Should I sow orchard grass to cut two crops of hay a year? I have been intending to plow it up for I think it a loss.

The Chair: Will some one answer that?

A Member: I will state that I have tried that and found it a failure. The stunted grass will kill it out.

The Chair: We have passed over some of the exercises by the gentlemen not being present. Mr. Coler is here now, and Mr. Todd. We will now retrace our steps a little, and call upon Mr. Coler for his paper. Mr. Coler will now address us on the subject: "The Pig for the Farmer and How to Produce It."

Mr. Coler: I will just say I was hardly prepared to read a paper. We have had considerable sickness in our family, and the contents of the paper have been written, as it were, on the spur of the moment.

THE PIG FOR THE FARMER AND HOW TO PRODUCE IT.

BY E. E. COLE, LIBERTY, O.

The pig for the farmer and how to produce it—

Is a question that touches the interest of every farmer and swine raiser in the land, and is of great importance. Every farmer should at least keep enough hogs to consume the waste products of the farm, garden, and dairy, and may raise more according to his surroundings.

The market demand should be one of his leading elements.

The farmer should keep his own brood sows.

Select sows of a good rapid growing breed that fatten readily at any age. (My preference is Poland China.) A standard breed is preferable and most profitable. Breed her to a standard bred male of the same type. Select animals with good shoulders; large full chest; good, strong back and loins; large, full hams; wide, well sprung ribs, and of good depth, good length; short, stout legs and good feet.

These are the leading points for profit, and should be considered first.

A good disposition is next. The minor points add to the appearance and should not be lost sight of altogether. Two litters may be raised each year profitably if properly managed. (Spring and fall.) If two litters are desired breed sows to farrow in February or March, just as it suits best. After sows are bred care should be taken to keep their bowels in a good laxative condition, which can be done by feeding potatoes, apples, pumpkins, or such food as is of a laxative quality. Provide good, warm, dry, clean quarters for sows to farrow in, which may be had by most farmers at a very little cost. Put your sow in pen prepared for her about five days before she is due to farrow and give her a reasonable amount of clean, dry straw.

If the weather is rough and cold, you should be on hand at farrowing time and see that the pigs all get a good breakfast and are properly dried. After she is through farrowing remove all the wet or damp straw and give plenty of dry straw, give the sow a little thin swill and feed her very lightly for the first day or two, then gradually increase until she is on full feed; be careful not to overfeed for the first ten days; avoid sudden changes of feed as scours are apt to follow. Feed sows according to the amount of pigs they have and their condition, but keep sows in the best possible condition while suckling. Feed them liberally and at from 6 to 9 weeks they may be bred for fall pigs. When the pigs are about ten days old prepare a separate corner or place for them that their dams can not get, provide an extra trough, put in a little shelled corn and milk and they will soon commence to eat and drink. As the pigs get older increase their feed, give them all they want; feed the sow liberally and don't wean the pigs too young; give them access to sun and air when not too cold. At about 8 to 10 weeks you may commence to wean the pigs; by this time they are old enough to depend upon their feed provided for them, and by gradually drying up the sow (by feeding her lightly and no swill), the pigs will scarcely miss her. Take the sow away from her pigs, keep her out of their bearing for about ten days. The sow should be turned out on pasture and fed very little grain until she farrows in the fall. At about farrowing time she should be looked after and see that she has a suitable place. If the weather is favorable and she has a comfortable place she need not be disturbed; if rainy a cover should be provided for her, this can easily be done by driving four or six stakes in the ground and a large door or two small ones over her. If her bed is wet she should be provided with dry bedding and she will do better than to move her to other quarters. See that she has water convenient, and if she is in good condition and has good pasture or plenty of mast she will not need any feed for a few days. Then she should be well fed and at near weaning time the pigs should have a separate place where they have access to green corn or extra feed suitable for them.

If two litters per year are not desired I prefer pigs for the farmer the latter part of March, as they need less care than earlier ones.

Either spring or fall pigs should be kept growing as rapidly as possible for market. They should have a run of good pasture; clover is good but however good the pasture, the pigs should have extra feed twice per day, and access to plenty of clean fresh water, charcoal, ashes and salt, and a good shade. As soon as new corn is fit for use commence feeding gradually and in a short time they may have all they will eat and they can be ready for market or family use at a very desirable weight before cold weather sets in. Sell all you can spare early, as the early markets are usually best; kill for family use when it suits you best.

Fall pigs that have no pasture should be fed three times per day while young. The feed should be of a nutritious, laxative quality, such as corn and oats ground with a small portion of oil meal or middlings and corn for about two meals and one of oats, or an occasional feed of vegetables or oil meal and bran, say about three-fourth bran to one-fourth oil meal, but don't forget the kitchen and dairy wastes, dish water, etc., which are good any time. They should also have access to clean fresh water and a separate sleeping place, which should be provided with plenty of clean straw. Don't allow any draft through their sleeping quarters in cold weather. They should have access to a field or lot for exercise in good weather.

A rye pasture is excellent for pigs or brood sows. If cattle are being fed corn a few pigs or hogs should follow them. As soon as pasture comes there should be a pasture for them. By this time your fall pigs will be about six or seven months old and should weigh from 140 to 160 pounds each.

Should you want to market them in May or June you should then commence to feed them in connection with their pasture, food more of a fattening quality, such as corn or ground rye, and in a few weeks they should be ready for market, usually at a good price and at a very desirable weight at from 200 to 300 pounds. Should you not want to sell them before fall, keep them growing nicely through the summer and have them ready for early fall market, as the early markets are usually the best, and you can get them off before the markets are overstocked.

The Chair: Is Mr. Coulter, of Delaware county, present?

Mr. Bonham: The gentleman is present, but he is so hoarse from the "grippe," that he asks to be excused.

The Chair: We have with us our estimable friend, Mr. Todd. Perhaps he will discuss this paper. Mr. Todd, will you talk to us on this subject?

Mr. Todd: Mr. President and Gentlemen: I did not expect this at all, still I might have expected it. I listened to the paper with interest and without any expectation of discussing it. I would not like to say any thing with regard to the paper that would conflict with what my friend has said, for I think a great deal of him. I remember of acting as judge where he showed stock last year, and he took his medicine so wonderfully well that I have always felt sympathy for him.

There was one thing that I noticed while he was speaking that he omitted from that paper every thing in regard to heart girth. He didn't say anything about that. I think that that is one point that we, as breeders and farmers, ought to notice. I should have the heart girths full, and should have them hold their fullness down to the joint of the shoulder

blade. There is oft times a falling off right at that point, and the pounds necessary to fill that out, to my mind, would be worth \$15 per pound; and it is the filling up of this little girth that is so hard to get, and that makes the dam or the sire so valuable. It is that with the sheep, it is that with the hog, and every other animal. Now, he said, I think, and I would enforce that, that a hog should have a broad back and thick body. I would have it a foot wide from the shoulder to the lung, so as to make it between the shoulder and lung as thick as possible. The blood is distributed to all parts, and the more you can lessen the length, the less distance the blood has to travel to do its work, and the greater will be the result in good time.

There was another thing he omitted, and that was in regard to the tail. We don't want pigs with too much tail. You know we have certain kinds of sheep that grow tail and nothing else; indeed so much so that the tail is said to weigh 120 pounds. I have never seen one, but I have read about it, and I have read that when the sheep is grazing upon the pasture, the tail is being drawn on a cart behind him; and, indeed, it is said that it costs two-thirds more to produce a pound of tail than the whole carcass, because it is so far off.

Well, now, to come down to what my friend said here with regard to the rations of the mother. I indorse what he said, but think I would commence with the rations as soon as the sow is bred, for it is in the embryo state that we destroy most of our young animals, in that they only make us a small profit, or return no profit to us at all.

I would have the sow, as he would have her, in nice clean quarters, and have her fed by one person, if I could, and allow no excitement during gestation. Now, in feeding bulky food, you all understand the manner I think. It goes into the stomach, and as the stomach receives it, there is a nice adjustment for its holding it. For example, if the food is two-thirds bran, the food is separated, and a better use of the gastric juices will be brought about to enable the stomach to do its work of digesting the food.

Now as regards the little pigs. There is no danger of having "runty" pigs, or pigs with scours. I am satisfied that that is the experience of everybody. In our early days we used to knock out black teeth, and all manner of such treatment; while now we look upon the pig as a little machine that is bound to do his work without any trouble or expense on our part.

My friend spoke of having separate inclosures so that the pig might soon learn to eat. That is a very important matter to every man who is engaged in raising and selling hogs. Right here I want to say that two-thirds of all the men who are feeding hogs to day don't know enough to

throw corn to them. I mean the most of us think in this way: We expect the pig to get his living, save that from his mother, in clambering after the feed thrown in for him, swill, etc., and in the mud. Now, you know a pig is tidy, neat and clean instinctively. No animal keeps so nice and tidy as the pig; with nice care our babies wont look half as presentable, and the baby is washed three times a day, and the pig not washed at all. The dirt sticks to the baby more readily than to the pig, and so the pig with any kind of care would be as clean as the baby, if not cleaner. But if you push him down into a trough, into the slop and through the mud, he is not to blame for being dirty; it is simply your own fault.

There is another advantage in connection with his being placed in an inclosure where he can be by himself, and have a trough that is especially constructed for the baby pig. Do you know that the hog is an animal of necessity, and is bound to live in this world, and you can not keep him from it, and just as much as he has proved to be a necessity, just so much will he be prepared to pay his way with proper care. But you take a pig and force him to get his living, and the result is you force him to hurt his nose, and his nose will grow longer than it otherwise would become, and directly he begins reaching to the first row of potatoes because his nose extends out so. So I think we can make him grow a short or long nose just according to the care and food we give him.

One point I wish to notice and that was with regard to our keeping our eye upon the market. The markets, as they have run for the last twelve years, I think will satisfy every man that there is need of looking after them. We have in September—the latter part of August, or the first part of September—always a market for the hog, provided we give a man a profit on the hog, notwithstanding the price of corn for the last two years, provided he is the right kind of a hog, providing he is the kind of hog my friend described to you; provided also that he is matured and ready to market the first part of September, weighing 200 pounds. A hog fed with corn and well cared for in every way, is sure to be a paying investment, and the secret is to keep the machinery in good condition, and every thing working in perfect harmony.

Now, we understand perfectly well that after September the market for hogs every year goes down, and why? Because western people find hogs in their own markets at this season of the year, and they don't need any of ours. Other seasons of the year they can't rely on them entirely, and the question with us is how we can farrow our pigs and have them on the market, and find a market for them in the fall even in Kansas and Nebraska, and keep pace with the western markets, hogs weighing 200 pounds and selling at five or five and a half cents, live weight.

My friend gave the cost of feed, in that it cost from three, three and

a half and four cents a pound with the present prices of feed, with clover and other things used to the best advantage. Now, what would have been the profit on the pigs provided you could have received four or three and a half cents? You would realize a half cent profit. Now you say there is no money in hogs costing three and a half cents and selling for four, five and five and a half cents. Well, it is your fault and not the fault of the business, simply because we don't understand it. I might talk here until the sun goes down and comes up in the morning, and still have more to say on this point.

Now there was one other thing that I had on my mind which has slipped my mind at this time—yes, it is in regard to farrowing pigs. My brother spoke as though there was a great advantage in having a sow breed twice a year. I don't think so. We don't want to engage in any business so as to over produce, and we have hogs enough on the market; and then we can raise better pigs, I am satisfied, by only raising one litter a year. And then we don't want to keep pigs over the winter. There is no profit except it be by feeding off the refuse about the kitchen; but with this, with a little corn added, you can keep the pig growing all the time. Whenever you let down on the growth of the pig you have lost a profit for perhaps two, three or four weeks, and you will pay the cost, for it will take a long time to get him back in the same condition. You don't want to feed him so as just to keep him alive; if you do you are losing your feed; you must feed him enough to assist his growth. In regard to wintering a pig I would see that he has good warm quarters, good clean sty, and often feed him soft feed in this proportion: two-fifths corn meal, two-fifths oats or bran, and I would mix it with hot water, and then thin it to make it bulky. Bulk is what you want to make the flow of blood through the body and keep the machinery in perfect harmony; and then in doing this you can have your pig on the road to market in April. He ought to weigh 200 pounds then. Get them on the market in April or May, because he weighs more then, and if not put on the market at this time you will lose, for they generally go down again in weight after this time. The spring market is the best market in the year. Everything is furnished just as well as it can be for profit. And in Ohio, if any man with price of corn as it is, if he fails, I say, to breed and have hogs to meet these conditions, he has failed through his own fault, and there is no question about it.

Mr. Coler: I won't take the time to discuss this question, but there is one thing particularly I would like to mention, and that is in regard to heart girth. If I left that out I overlooked it; I intended to put that in; I thought I had it in. Now, as to the fall pigs. I don't know as I just recommended fall pigs, but in case parties would prefer fall pigs

how would they be supplied? If we don't raise fall pigs where are we going to get them? We want something on the farm to eat up the waste produce and follow the cattle, or something of that kind, and that is why I said we should have fall pigs.

I spoke of the pig having length. I agree with Mr. Todd that the shorter and broader pig is the better; but I don't think I want him too short; but still I don't want him too long, but just to keep him in good shape. There is not much danger of getting them too long and plump. There is more to be taken into consideration besides the heart girth—the liver and bowels should receive much attention. There is, however, other things he has touched on, but there is no use going any further.

The Chair: Any other remarks on this subject?

Mr. Todd: I want to say I meant just what I said; I want the hog longer through here; longer this way (illustrating).

Mr. Hagerty: I am sorry the first gentleman apologized for fall pigs. The way affairs are down in our country, the southern part of this State, we need fall pigs to follow our cattle. There is more profit in the hogs that follow the cattle.

Mr. Coler: I don't know as I just apologized for that. I think there is great profit in fall pigs. I may say that in this section; at least, it depends largely upon the class with which we have to deal. I raise a few fall pigs because I have a demand for them, consequently I spoke of this, and said occasionally I find a litter of fall pigs very profitable. Of course, I also have my spring pigs on in June and May.

The Chair: Any thing further? Is that subject exhausted? [No response.]

Is there any miscellaneous business that you desire to attend to?

A Member: Some gentlemen spoke to me about the Horse Breeders' Association not being provided for. It is on the programme, and they expected to meet there at this time. It was suggested that we meet in this hall this evening. I notice that the cattle men have this hall this evening.

Mr. Bonham: I presume we could get either the Senate Chamber or the House of Representatives for to-night, for the meeting of horse breeders; the shorthorn breeders have the use of this hall to-night. Leave the matter until afternoon, and in the meantime I will inquire in regard to the use of the Senate Chamber.

The Chair: If the members of the different associations desire to make any arrangements they can do so. Mr. Bonham will report this afternoon, at the afternoon session as to the place of meeting of the horse breeders. Is there any thing further?

Mr. Gordon: I see there is a mistake in the programme; the Merino sheep breeders are announced to meet to-day; we will meet to-morrow at ten o'clock.

Mr. Bonham: Don't you meet this evening?

Mr. Gordon: No, sir.

Mr. Bonham: I have a letter from Mr. Stanley; it is on his order that I have made this announcement.

Mr. Gordon: It has been made then since I have had information.

Mr. Potter: The meeting will be on the 13th. I suppose it was a mistake on the card, because I received a former letter from him saying that it would be this evening.

Mr. Bonham: I received a letter from Stanley and it said this evening at seven o'clock, and I made the programme accordingly. It is very easy for a man to make a mistake in his calendar. I had it before me when I made this programme. It is too late to give the notice for to-morrow.

The Chair: Is there any thing further before we take a recess? What is the pleasure of the meeting?

A Member: I move that we adjourn. Motion carried.

And thereupon the meeting adjourned to meet at two o'clock, city time, same day.

Convention resumed at 2:30 P. M.

President: It seems to be necessary to make a change in our programme, and as none of our sheep friends are here, we will take up the next subject after that which is The Clover Question. Mr. W. Scott will now entertain you with that paper first.

CLOVER AS A FEED, GREEN AND DRY.

By WM. SCOTT, COLLINSVILLE, BUTLER COUNTY.

There is a proverbial saying that those who are enjoying great good fortune are "in clover." Knee deep in clover means fat cattle and sheep and thrifty, contented swine.

Red clover was known to the Greeks and Romans 2,000 years ago, but was not cultivated till English farmers began to learn something of its value about the year 1633—250 years ago. At the present time Ohio farmers do not fully appreciate its worth either as a fertilizer or a feed. There are many farms, especially those rented, on which clover is rarely sown, the owner believing that every dollar possible must be wrung from the soil and nothing returned. These lands soon become exhausted and bring no revenue to the owner, and are neglected by buyers as worn out farms.

Many who grow clover dispose of it for little more than its manurial value. Good clover hay can be bought in the mow within thirty miles of Cincinnati for from four to six dollars per ton.

Animals require in their feed, the elements of which their bodies are composed and in the right proportion to suit their needs. They can not compound the substances of muscle from its elements; they appropriate from vegetables what they find ready made for their use.

The working machinery of animals, that is, the muscles, tendons, ligaments and all the internal organs are composed of albuminoids, containing 16 per cent. of nitrogen. The carbo-hydrates serve to keep up animal heat and the surplus goes to lay on fat. From this we see that growing animals and those subject to the wear of labor require in a large measure, foods that will build up the frame and replace the waste; not foods that are largely fat forming.

Clover as a feed is valuable in that it contains a large per cent. of albuminoids, and is especially adapted to the wants of growing animals.

Green clover as a feed for swine is not excelled by any forage crop. Hogs can be carried through the summer in good condition, without additional feed, as has been done on most farms during the past summer. For fattening hogs during the summer months, a custom that has grown largely in favor during recent years, clover is a most valuable addition to corn.

Grass is the natural food of swine as well as of horses and cattle, and in following nature as closely as possible, the best results are obtained.

Corn, ground or unground, is a strong, highly concentrated food, and to the custom of feeding it alone is no doubt due much of the liability of hogs to cholera. Clover, cut short and mixed with meal, is the most wholesome and gives the greatest gain. The feed goes to the stomach in a porous condition, is readily penetrated by the gastric juices and easily digested.

Hogs kept in a close pen and fed exclusively on corn, as is the usual method, are almost sure to get off their feed. This may be prevented by giving them the run of a clover lot, or if this is not convenient, then mow clover each day and feed as to horses and cattle; the last method is the most economical, as to the feeding of clover, but this comes under the head of soiling. A lot of hogs fed on corn alone and not making a satisfactory gain, were given access to clover, when they made an additional gain of a pound a day each with no more corn. I believe there are few farmers, who in feeding large lots of hogs, give any other food than corn. The corn-fed pork in the market is mostly fat. The amount of lard oil used for manufacturing is relatively small. The pork as now produced is unfit for food, and the fat finds too many rivals in the market in cotton-seed oil and lard.

The largest part of our pork being made from corn is deficient in the nitrogenous compounds which make blood and bone, muscle and tendons. Among the poor whites of the southern states corn meal and fat pork make up a large part of the food of the people. They are both deficient in albuminoids. The people who live upon them are ill-nourished and suffer physically, intellectually and morally thereby. On the other hand, the Scotchman as shrewd in his diet as in his dealings finds a more economical supply of albuminoids in oat-meal, haddock and herring.

The thrifty inhabitants of New England supplement the fat of their pork with the protein of beans, and corn and wheat flour with cod fish and mackerel. While living upon such a frugal diet they are well nourished, physically strong, and distinguished for their moral and intellectual force.

Pork when made from corn alone has relatively little lean; the fat pork when used for food serves for fuel to keep the body warm and yield muscular energy for work. The fat of beef and other meats, and the cotton seed and olive oils serve the same purpose. Sugar, the starch of wheat and corn, and other grains that make up a large part of the food of mankind serve for fuel, and thus perform the same service in nutrition as fat pork. The use of cotton seed oil and the consumption of sugar has become enormous, while the demand for animal and vegetable fats for other uses than as foods, has been supplied by petroleum and its products. Now we do not pretend to say that by feeding clover to hogs we can produce pork that is all clear meat, but we do say by a mixed diet the proportion of lean will be greater, the pork more wholesome, the gain in flesh will be more rapid and more economical for the food consumed. Clover which is a good feed green, is an equally good feed when well cured. A farmer in southern Ohio finding his

hogs in the mire on the eve of a cold snap, turned them onto his barn floor, and threw them clover hay for bedding; he found in the morning that the hay was gone, the hogs having for a long time fed on corn only, ate the hay with a relish.

Elliett W. Stewart in his work on Feeding Animals gives an experiment with clover in which four pigs of equal age and weight were fed two on corn-meal wet with hot water and allowed to stand 12 hours, the other two were given meal treated in the same way, to which was added two quarts of short cut clover hay mixed with the meal. Each lot were fed all they could eat. The experiment was continued 120 days; those fed on clover hay had the best appetite, ate the most steadily, were the most thrifty. The lot fed on meal alone gained 110 pounds, those on clover hay and meal 143 pounds each, or 30 % more; the result of this experiment leads him to remark that "feeding clover hay in winter may be novel, but why should it not be considered as appropriate to feed pigs on clover hay in winter as to feed horses clover hay in winter?" The pig eats green clover in summer if he can get it, as profitably as the cow or horse, and when farmers understand the true system of feeding, clover hay will generally make part of the ration of the pig. Clover is the richest of artificial grasses in albuminoids, answering as a substitute for oil meal and other nitrogenous foods.

When used for pasture, sheep and swine should not be allowed to feed on it when young; the growth of the roots depends on the green tops, and early pasturing will cut short the growth for the entire summer. Milk and butter from clover, has not the fine flavor of that from blue grass, but natural pastures are limited, both in area and product; an acre of clover is equal to three of grass and is less affected by drought. Cattle should not be first turned on clover when it is wet with dew or rain, and should have easy access to all the salt they want. In fifteen years have had but one case of hoven among cattle running on clover, and that was not serious.

The Agricultural Experiment Station of Wisconsin, has published the results of experiments to test the relative value of clover and corn fodder for producing milk and butter, and also the comparative value of mixed hay and fodder. These experiments were carefully conducted, each continuing three weeks, one week of preliminary feeding to accustom the cows to the food. The fodder was cut early, well cured, and mature ears husked, the mixed hay was one-third clover and two-thirds timothy; the clover medium red, cut early enough to preserve the leaves and heads. Both fodder and hay were fed full length; these were supplemented with five pounds of corn meal and seven pounds of bran to each cow daily in two feeds; of hay and fodder they had all they would eat. At the end of the first week's test, the feeds were changed about, so that the two cows of each lot were on both sides of the trial. Three weeks were given to each trial. The food required for producing 100 lbs. of milk—

When feeding corn fodder was	193 pounds.....	corn stalks.
	25 "	corn meal.
	36 "	wheat bran.
When feeding mixed hay.....	71 pounds.....	mixed hay.
	26 "	corn meal.
	36 "	wheat bran.
Clover hay.....	60 pounds.....	clover hay.
	26 "	corn meal.
	37 "	wheat bran.

From this experiment it was learned that one ton of mixed hay was equal to three tons of corn fodder and one ton of clover was somewhat more.

Milk is a highly albuminous product and draws strongly on foods rich in albuminoids.

We value horses for their strength, speed and endurance, yet in raising them we are apt to loose sight of the ultimate use for which they are intended, and fail to feed that kind of food which builds up bone and muscle.

Clover is not every thing, but it is rich in muscle forming food, and is well suited for a part of the ration of growing colts. A farmer of large experience in feeding clover to

horses considers it rather better than timothy for all farm feeding, except to horses that are to be driven fast on the road, and might be good for them if given in small quantities at each feed; for work horses he considers it far superior to timothy. A team of horses that had been fed on clover the year round, for six years were always in good condition and ready for work. There are at least two reasons why clover is not more generally used as a feed than it is; first, that farmers do not know or appreciate its real worth and the difficulty of securing it in good condition. For making clover hay fair weather is required, but the opposite is apt to be the case at that time of the year, and the corn requires constant cultivation. Hay cured, then wet with rain has most of its value washed away.

Prof. Beal in his work on "Grasses" says, from analyses made illustrating the changes in composition from the appearance of the leaves, to the maturing of the seed, that the time of bloom, or a very little later, is the time to cut for hay; the amount of water has diminished relatively and there is a proportionately larger amount of nutriment in the material cut, and the weight of the latter will be at its highest point economically considered; later on the amount of fiber becomes too prominent, the stalks become hard, woody and indigestible, and the albuminoids decrease, while the dry seeds are readily detached and lost with their store of nitrogen.

Clover may be secured without regard to the weather, when richest indigestible food by the ensilage process. Corn is, and will no doubt continue to be the great ensilage crop, but corn is not in itself a perfect ration.

Ten tons of green clover is not an unusual crop in a good season, and one ton of clover is equal to two tons of corn silage. The crop can be as profitable ensilaged as corn. The cost of growing clover is nothing against the cost of growing corn, and when fed with corn, it supplies the elements of food in which corn is wanting.

Mr. Coler: I would like to ask the question: If I understand the gentleman, he said, one ton clover cut was equal to two tons of corn. Is this what you said?

Mr. Scott: One ton of clover cut as silage was equal to two tons of corn.

Mr. Bonham: He means about one-third of that Yankee Measure.

Mr. Coler: I understood him to say that it was some one's experience, its bloom was the best stage to cut clover in. I would like to ask if any body in the house has had that experience? My experience is that that is too soon to cut clover. It is not substantial enough. It may be only prejudice. I would like to hear from somebody that has been in the habit of cutting it about the time the bloom is on. It is my idea it should be cut about the time the bloom is turning.

Mr. McGuire: I would rather cut it than wait until it gets bad weather. My clover crop was a total failure because not cut soon enough; you had best begin to cut it when it is about in bloom. It is just as good out in the green state as any other.

Mr. Jones: I would like to ask if we could not get along with clover entirely?

The President: I believe Mr. Terry advocates a plan of feeding his horses and cattle on no other kind of food.

A Member: I cut a little every year, and we generally begin pretty early, about the time it is in full bloom; about two-thirds of the bloom

beginning to turn brown. We have a great deal of corn to turn and can't do it all at once. We had probably 50 acres this year. We began early in June and worked until the first of July; worked two weeks at it and it was just turning brown, and we found that we could cut it better and it made better feed.

Mr. Harter, Delaware county: I usually try to cut clover when in full bloom. We cut it this year when in full bloom and never had clover turn out as well as that.

Mr. Bloom, Madison county: There is a question I have been thinking considerably over. Whether on a small farm it was not better to raise clover than to undertake to raise any timothy at all. This winter my experience has been my horses have done better feeding on clover than heretofore in my recollection. I cut my clover when in pretty good bloom. I had considerable to cut and began perhaps a little earlier than I would otherwise, but we cut about 60 acres of clover and got it up in good time. It is true, some of it got a little browner than we liked it, but we put it with the other and the horses did better than I have ever had them to do. We have not given any timothy hay since along about the first of October. I believe it is profitable feed both for horses and cattle.

E. J. Green, Noble county: I have had a little experience in cutting hay. It is not practicable, I think, in our section of the country, to depend entirely on clover, for the reason our harvesting is generally done with a smaller amount of force than we usually keep on our farm. Sometimes hay harvest lasts a month by depending entirely on clover, when we put up a large hay harvest; the clover will become too ripe before we can secure it. My experience in cutting clover is, we cut it too ripe rather than too green. I feed it to sheep considerably, and where it is cut at the right stage, just after it comes in full bloom, they eat up the entire stalk, and but very little is left in the manger. I think it is better to depend partially on timothy. Then we can secure a certain amount of clover in good weather, and about that time the timothy is ready to cut.

Mr. McGuire: In our high lands we can not practice that unless we go into a very extensive system of underdrainage. On a sandy soil I should use clover entirely in every instance for feed. Where I reside it will freeze unless it is underdrained, and I could not depend altogether on clover. That is the only reason why I can not. I am satisfied clover is the feed for horses, sheep, cattle and, as some man said, it is good for every thing excepting for hired girls.

Mr. Coler: I would like to ask as to hogs? I believe the gentleman in the paper said that some man fed his hogs clover, and I believe he held out the idea that it could be cut up and fed with corn meal. Now, I would like to ask if any one here has any experience in feeding short-cut-

clover to hogs, whether wet or dry, what satisfaction they got from it, and what were the results?

Mr. Foster, Urbana: I can answer that, I think. Some time ago I was feeding a large number of hogs, and I had a steamer, and I was cutting clover hay up and mixing with about four quarts of bran to the bushel, and I steamed twenty-five bushels at a time. I usually did that myself, but I went to town one day and left it in charge of the man, and when I came back I discovered that the hay was burned; he had allowed the steam to get too hot. I had some calves that I was feeding in the shed, and before letting the calves into the shed we filled the trough with this cut-hay. We opened the shed and let the calves in and they followed us and smelt of it and would not touch it. I watched them awhile and then gave them a chop feed. As we passed through the yard over to the place where I had my steamer, I noticed a lot of young hogs were following us, and I said to the man, "let us throw this down; so we did, and they ate up every bit of it. I fed that entire twenty-five bushels of clover hay to those shoats. When I was visiting in Urbana, some two or three weeks afterwards, I met a gentleman largely engaged in distilling. We were talking about feeding hogs, and he said it was the practice at the still-house to give their hogs a cut-clover hay feed, just simply enough moisture to make the middling or bran to stick together. Now, again, I feed a great deal of cut-hay in the winter. If you have a little left in the basket, a peck or a hatful, throw it down among your hogs, and they will go for it quicker than for corn. I would feed my hogs cut-clover hay, for the avidity with which they ate this twenty-five bushels, and the experience of this distillery shows it is practicable.

A Member: Hogs relish it almost as much as corn. I cut my clover hay quite green.

Mr. Foster: On our black land clover grows very coarse, and if you allow clover on this rich, black soil to come to a half or two-thirds brown, you will have all the lower leaves dead and bitter, almost rotten, and then you have too coarse a stem; so I usually start in and cut green and have the best clover hay I ever raised.

Mr. Oken, Preble county: I wish to ask if any one has had experience in raising Alsace clover?

Mr. Green: My experience has been very limited with Alsace clover. I cut one crop of it. It is very nice hay and came out green in the spring, but the clover all died out. It was the last crop I ever had of it.

Mr. Bonham then read a paper on "Clover Roots," showing their value as fertilizers.

After the paper a question was asked in regard to clover midge and other insects, which elicited the following discussion:

Mr. Bonham: I was at Lodi, in Huron county, speaking on the same subject; afterward there came to me a gentleman whose name has just slipped me at this time. He lived outside of Lodi a few miles, and he formerly did business in Long Island, New York. It was not what we could call an attractive piece of land. It had a ravine running diagonally through a large part of it, southwesterly, almost all of it high ground. He had about twenty-one acres in one field. He was experimenting on that land; he was an amateur—not that he needed to make money. He was a good object lesson to his neighbors. He claims we ought to average fifty bushels of wheat to the acre, if properly managed; 300 bushels of potatoes, and five bushels of clover seed each year. Those were pretty near his averages. I won't go into detail to show how he is doing it.

How does he hold in check the clover midge? The year I was there he had sold five bushels and a peck of clover seed per acre. A neighbor of his told me. "I did not have a bushel of seed on my farm. We didn't have any in the neighborhood because the clover midge took all our seed." How did this man do? He had noticed the clover midge laid its eggs as the clover came in bloom. The midge is a small insect and flying about deposits its eggs in the clover, generally as it came out in full bloom, and so affecting the seed. He said if you prevent Mrs. Midge from laying her eggs there then you will have no trouble. So he went over it as soon as he saw this bloom coming over his crop and just let it lay on the ground. The second crop he let stand for seed and had 5 bushels and a peck—that is the way he held it in check.

Mr. Black: I want to ask you if grazing clover interferes with the growth of the root? What would be the effect of frequent clipping of the clover by the machine?

Mr. Bonham: I suppose it would check the growth of the root in proportion to the check on the growth of the plant. But it throws out after each clipping some very small fibers, but the second growth will not be so heavy.

Mr. Black: Mr. Cory, who is considered authority, recommends that we begin very soon after harvest and clip our clover two or three times.

Mr. Bonham: Only once. I do not think it increases the growth of the root. The weight of the root growth produced that way is not so great.

Mr. Green: I understood you, Mr. Bonham, the first crop should not be disturbed. Frequently on rich soils the first crop after the grain crop is cut off makes a larger growth. If it is impracticable to cut that crop it should be left on the ground to fall down.

Mr. Bonham: I did not say "disturbed" but pastured; after a rank growth cut it in the fall and save that for sheep or cow feed. Cut it

along the latter part of September or first of October and you will have a much cleaner growth the next year if you want to make hay. It don't give so much harbor for mice and I find better results than ever.

Mr. Coler: In case you only want to leave that for pasture would you let that first growth lay or die.

Mr. Bonham: I always cut it off. The reason is I believe it branches out and covers the ground better. There would not be so many long, sprawling stalks. I believe you have a larger per cent. of tops for pasture.

Mr. Coler: I want to know this; for instance you sow your clover to wheat, after cutting your wheat, your clover springs up and makes a heavy growth that season. This season's clover will make a heavy growth. Would you cut that off?

Mr. Bonham: I would cut that the latter part of September if it is very heavy—always did it.

A Member: Fall plowing or spring plowing?

Mr. Bonham: I prefer the fall plowing.

A Member: Then you plow again in the spring?

Mr. Bonham: No, sir, I don't. I wait until the ground is dried off, until it is dry enough to pulverize and it will be lively and more uniform.

At this point there was read a paper on

PRACTICAL SUGGESTIONS FOR IMPROVING THE FLOCK OF FARMER AND BREEDER.

BY S. H. TODD, WAKEMAN, O.

In the discussion of this question, as well as every other agricultural question, three important factors are to be considered: *First.* Is the climate, surface of land and locality favorable for the industry? *Second.* If so, will there be a consumptive demand for the product when produced? *Third.* Will the price paid by consumer be such as will return to the producer a fair compensation?

If these three conditions are favorable, we need not hesitate to engage in the business.

Every flock-master who has handled sheep to any extent is ready to vote in the affirmative as to the favorableness of these conditions. So we leave this point without further discussion.

Let us notice some of the benefits derived from keeping sheep. They are valuable to the farm as a scavenger, destroying obnoxious weeds and briars better than they can be exterminated in any other way, and this while the lazy, shiftless farmer is lying in the shade or lounging around the corner grocery store. Thus his farm is made presentable to the passer-by, regardless of his efforts to have it otherwise. The sheep are more easily handled kept in inclosures, with half the expense of any other animals. When fed they are not likely to trample down and devour you before you can get feed into the troughs. Their winter quarters need not be expensive. No time is spent in stanchioning and letting out. No stables to clean out. If well littered, all liquid manure can be saved without cement floors. Large quantities of manure can be made of the very best quality, which our old worn farms need so much, and with their golden feet they can

travel over the carpet of green grass without injury to the sod or packing the ground so as to make it hard and lumpy, thus destroying its fertility.

To-day 63,000,000 of people are looking towards the sheep for a large proportion of their meat rations, as well as the clothes they wear, the carpets they walk upon and the comfortable beds they stretch out their weary and careworn forms upon while nature is bringing back lost energy through her sweet restorer, sleep. There is no ruminant animal that has as great power of assimilating food into meat as the sheep, thus making him a machine for manufacturing carcass at the least expense, together with the valuable mantle he wears upon his back.

The sheep is an important factor to health—good health to us poor creatures means every thing. And there is no meat so healthy as that which comes from a good ripe mutton carcass. While the stomach is thus supplied to run the machinery of life, rheumatism and neuralgia of limbs, back, shoulders, arms, bowels, heart, stomach, face, teeth and head are all made to succumb to the soft flannel covering. It is said with mutton for a diet and flannel for wear we may unlock the gripe. We have been looking entirely at the temporal benefits of breeding the sheep, but as man can not live by bread alone, let us notice the benefits of the industry as regards the soul.

There is no school that has the same power of moulding character, increasing faith and growing backbone in men as that of a shepherd's life. For proof of this let us notice a few examples as given in sacred writ. First, that of Moses. He was a boy of unusual intelligence, had all the advantages that the best colleges could give, besides he had been trained in military tactics. With all these acquirements what did he do? After forty years of intellectual preparation he did just what thousands of other men do when they graduate from college. Filled with selfishness and a desire to do something he went out and killed a fellow-man, and God pushed him off from his home and surroundings, made a shepherd of him forty years before he could be trusted as a leader to bring God's people out from under the yoke of Egyptian bondage.

Next we view David as he stands before that Philistine giant who is bidding defiance to Israel and Israel's God. What gave David such faith in that sling and those pebbles he had picked up from the brook? It was his shepherd's life back in that rural home, and thus he was enabled to defy the Philistine giant and save carnage and death to both great armies.

The boy Joseph—look at him over in Egypt, in that great metropolis, a member of Potiphar's family. Some have attributed his smartness to the corner he got on wheat. It was not that which saved the boy when Potiphar's wife drew her slimy form around him to induce him to commit that most damnable of sins; a sin that has sent the dagger to many a noble-hearted boy. What saved him? It was the roots of his character running deep down into that dead mother Rachel's grave way back in that rural home. Where did Jacob, the indulgent father of that boy, find Rachel? He found her at the well watering sheep. To whom was the glad news of the Savior's birth first made known? It was the Wise Men of the East and the shepherds on the hills of Galilee watching their flocks by night. We have many beautiful, instructive and impressive figures drawn from the sheep, the shepherds and the shepherd life by the great Shepherd and Divine Leader of man. What stronger word of meaning as to the care the flock-master should give to the sheep than those uttered by Christ himself, when he said the Good Shepherd layeth down his life for the sheep. With all of these advantages connected with the sheep industry, the startling fact comes to us that from the different classes of live stock, sheep stand lowest in the summary of estimated values. In a total of 2,339,787,770, the sheep represent only 108,397,447; a little more than 4 per cent. of the whole. In view of this fact, I say, there must be something wrong that we, as breeders and producers, must right. In the first place, are we breeding the sheep that consumption demands? for around consumption verges all the probabilities of the sheep. Consumption is asking for wool of medium length, good strong fibre, free from gum and sweat balls. At the same time it wants a carcass of mutton juicy, tender and sweet, that is especially noted

for its early maturity. As lamb mutton or mutton from young sheep is occupying a conspicuous place in the sheep interest of to-day, our best prices are only reached by such meat. Hence we have prices ranging from 8 to 7 cents per pound on the same market. Any animal to produce certain results must be, constitutionally thus organized, then fed to develop that organic power. Thus the Merino has been bred and fed to develop the organic power of producing wool of fine, dense fibre, full of grease, and a carcass covered with labyrinthian folds, without any idea of mutton. And how well have they succeeded? The animal is a living witness. While the English people have bred to develop the organic power of their sheep to produce mutton, the Persians, on the other hand, have developed the organic power of their sheep to grow tail, and you may see that wonderful sheep contentedly grazing on the pasture lands drawing behind him on a cart a tail weighing over 100 pounds.

I shall now attempt to sketch to you the kind of a sheep we breeders should breed to best meet the wants of consumption. He must be long in body, but his length must be in width of shoulders and length of ham, thus making back short. Back broad with well sprung ribs, loins broad and thick, ham over top broad, carrying out full, and twist thick and firm, flank well down on line of belly, lower line parallel with upper carcass. Deep heart girth full, especially so at point of shoulder blade. Here meat is often worth \$15 a pound. To the intelligent breeder the filling of these otherwise notches is what makes the ram worth \$300 or \$500. The brisket should be wide and full, even out to fore legs; no prominence in breast bone should be seen, legs short, well apart, good bone well covered with muscles, neck short, arched and coupled on the back so as to leave no notch in neck, head well up, broad between ears, broad face, heavy muscle with wrinkles on top, nostrils wide and full, carcass firm with plenty of meat on back, and meat must be well marbled.

The carcass must be all covered over except the end of nose, eyes, ears and feet with a good fleece of wool of medium length. The advantage of this machine is early maturity and no loss of time in doing its work. The blood will travel in making its distribution in the least possible time. It is said that it takes two-fifths more to produce a pound of the large tail sheep than it does one that I have described, because the blood travels so far before it is unloaded. The ram should be full of grit, with good principle. Grit without principle and you will be likely to take short runs with long stops. The ewe must be like the ram or as near like him as possible in characteristics, and they both will form a golden ring set with precious stones. The stone that represents the sire will occupy the center and it is a diamond, which makes the value of the ring. Hence, it should not be broken or marred, if so, the value of the ring is gone. After the breeding season is over much depends upon the care and management of the ewe. She should never be worried or unduly excited, fed by one person, regularly, and by daylight. She should have plenty of clean water, a little salt given every other day, and comfortable quarters. And now the feed—clover hay, straw scattered over yard and stable as often as once every day with a grain ration of one-fifth corn, two-fifths oats, and two-fifths bran in bulk. Give ewes a run in fields in good weather. Treated in this way their lambs will be as strong and healthy as calves at birth, and will grow like weeds after a June shower, all through the season. The trough to feed in should be made from three twelve-foot boards by eight inches wide, the side boards extending as far below the center board as above, thus forming the bottom of two troughs. Then we put on end pieces same width and two feet long, then put on legs extending them just as far below as above end pieces, and have them so trough will be 14 inches to top of side boards. The advantage of this trough is it takes the sheep much longer to consume the food than in a V trough, and if it gets full of snow turn it over and you have a clean trough to feed in. Do not let ewes and lambs run on old pastures so full of parasites, which will prove very destructive to young lambs. For profit, I would mow a piece of clover and timothy seeded this year, next year then hay would be all clover, next year pasture it, then it would be mostly timothy, the very best food for young lambs.

The lambs sired by a good mutton Shrop ram lamb will be ready for market any time after they are eight weeks old, with a perfect ripe carcass that will command the highest price, and thus advertise mutton as food so as to increase its consumption 100 per cent. each year, as well as put a grade of wool on the market that buyers want.

Don't keep breeding ewes as breeders above five years of age. As soon as the ewe turns the down hill side of life she is no longer a reliable breeder.

Don't buy any sheep to take on the farm from the stock yards or allow your neighbor too, if you can help it. That loathsome disease, the scab, is being scattered all over our State through this transaction. This will do more to destroy the sheep industry than all things else combined. We should urge stringent prohibitory law against this traffic.

We must weed out our flocks, I know of plenty of flocks in our part of the State that by free use of the shotgun and rifle a hundred or even two hundred dollars might be saved to the owner. I well remember wintering an old paracital sheep at a loss of \$1.50 on sheep, besides scattering disease over my farm through this sheep, which resulted in a loss of \$300.00 to my flock.

Breed for early maturity, remembering that the first 100 pounds of mutton and wool is produced at a much less expense than any weight after that, besides it commands a much higher price, and the chances of disease are many times less. Don't keep too many sheep on the farm, keep nothing but the best and realize from 50 to 100 per cent. profit on money invested.

Don't be preaching the gospel of despair and looking anxiously toward McKinley for help, when you can get just what you so much desire by using a Shropshire ram. In conclusion, let me say depend on merit, not so much on tariff, and we as producers and breeders of sheep will be vastly better off.

Mr. Tod told the following story to illustrate a point: Once we had a preacher at our house over night, and in the morning I asked him to read a portion of scripture, and have you any idea what portion he read? It was in Mark, where the Savior cast out devils and they went into the swine and drowned two thousand of them. When he got through he said: "Brother Tod, what do you think of that?" I knew he said it because he knew I was raising swine, and it puzzled me a little. Finally I says: "It suggests to me there were devils enough in one man to drown two thousand swine. You are preaching to three hundred of them. You have a big job on your hands. Go to work and get all the devils out of those men and I will furnish the swine for them to go into."

In reply to a question about parasites in old pastures Mr. Tod said:

My experience has been this: We have many parasites that are troubling our sheep at the present time. I am satisfied some of them were in the old pasture, and are there the next year, and do the work of destruction, especially among young lambs. They will get the parasite that causes the disease we call "paper skin" among lambs. I remember the case of one we bought in Michigan, and one morning we had five in all that were troubled this way. This was the worst one, and he was lying broadside. I drew him out of his pen to kill him, and the breakfast bell rang, so I thought I would wait, and when I got out he had got up. I turned him out into a little pasture near my house where I

had some Shropshire sheep, not thinking there would be any bad results. Evidently he carried these parasites all winter. After grazing commenced he made rapid improvement himself, but the lambs took the same disease, and if I had cut his throat and cremated him in the fall I would have been better off. We have reports of many of these parasites living through the winter in old pastures. If the old pastures were plowed up we would not have that trouble. We are following the plan of crops on pasture land.

A Member: Do you think it possible those lambs may have gotten that in some other way?

Mr. Tod: I think not. The experiments that have been made show that is the way it originates.

Mr. Oxer, Preble county: I inferred from the gentleman's paper that he refers particularly to Merino sheep. We are not troubled in our county. We have scabs sometimes by sheep being brought from markets. As to getting disease from old pastures, it is something we have never had any experience with.

Mr. Hagerty: There were some things in Mr. Tod's paper that struck me very forcibly, and I will take them up in their order. He spoke of sheep being great scavengers. We have heard that every year since I have been attending these meetings. In our section of the country sheep to be profitable are not scavengers; they do not destroy weeds to any extent. The only way to destroy weeds is to keep them down.

I do not believe, in my observation of the sheep and wool growers of the country, that their farms compare better than others for absence of briars.

He spoke of their not packing the soil, and I will have to take just the opposite of that. If I want to tamp a post I will take a small tamp and will tamp that post so much tighter than a man with a large one that he will throw away the large tamp and get a small one. There is no kind of stock that will pack that field like your sheep. Cattle do not pack a field. They may make a path through a field, but sheep will pack a field. In our section of the State—it may be different in Mr. Tod's section—they will pack that soil worse than any other stock on the farm.

He spoke of the speed of the blood. Well, I think the blood will travel just as quick through a tall man as through a short one. I think a small man has none the best of a tall man. I wish I was six feet two.

Now, in regard to bringing in sheep. We generally find in our county if a man can not get them at home he goes to Chicago and ships them in. They pick up all the good grade of steers in the country. They have their agent in Chicago and pick them up and ship them two car loads at a time; and our butchers last season brought in some cattle from

Chicago that they lost a few of, but they were slaughtered almost instantly and there was not much said of it.

What I got up here to speak about was this parasite question more than any thing else. Mr. Tod is right, we have old blue grass pastures that have been standing since before the war. They are not fit to put sheep on unless you eat them down to the earth. We do not keep sheep enough to do that. We have been running calves year after year in this pasture and the last eight years we have not had a thing to do well on that kind of grass. I do not believe that old blue grass is any account for young cattle; blue grass is good enough for a lot of mature cattle, but for young cattle or for lambs I believe it is the next thing to death. There is no profit in it. We have old blue grass pastures now that we could winter a thousand head of sheep on and we are going to tear up a lot of it. We are troubled with this paper skin or worms in the stomach. Now we are all interested in this, nearly every man here grows a few lambs; we use the remedy of old James Glass, that is, milk and turpentine. Turpentine and oil do not seem to have the effect, but milk and turpentine I believe is the thing you can give them without strangling the lamb and by changing new pastures you can save your lambs. We have had as much loss I expect as Mr. Tod.

There was a gentleman asked a question if it did not affect young lambs more than early lambs. Gentlemen, it will affect early just as much as the late. March lambs take down with this disease and die within ten days; lambs good enough to win premiums. I expect Mr. Tod has had the same thing. Where we are going to keep lambs put them on new pastures and the poorer the lamb the better the pasture. I don't believe rank clover or timothy is as good as new timothy on thin lands. I would grub elders up when I set the fence.

Mr. McGuire: This idea putting sheep and lambs on old pastures is a new idea to me. This paper skin disease I think we can get rid of if we try. I am satisfied that any of us don't farm as well as we know how. We come here and we talk about farming and when we go back home we forget all we learned. That is the great secret in farming. But some of us farmers can't follow out as much as we take in and try to be benefited by. This idea of farmers grumbling is perfectly ridiculous. I wouldn't exchange my little farm and go back to my mechanical pursuits for any thing. We are doing more damage by grumbling and driving the boy off the farm than any thing else we can do. I would not exchange my farm for the best engineer's place that runs a train in the country.

Mr. Tod: I see my friend here and I do not just exactly agree. He thinks the Berkshire breed is the thing. It seems to me that he is about in the same condition as the German was who was breaking his colt. An old

German had gotten his colt pretty well broken—he felt pretty well satisfied so far as he had gone. So, one night he thought he would put him to a severe test. Now, Shon you rolls yourself up in a blanket and you goes down and you gets in a fence corner until the colt comes along and you shump up and say “boo.” John did just as he was told, and directly the old German came riding along, and John jumped up and said “boo,” and the colt left the old Dutchman in the road, and he hurt himself pretty badly. He got up and says Shon that was too big a “boo” for the first time.

Mr. Hagerty: We commenced with Chester White. We have the Poland China registered hog now, and a very good hog. We are trying to get the Berkshire as fast as we can get there.

Mr. Green: I have been interested in this subject, especially in regard to the matter of the parasites and their effect upon flocks. I have had a little experience and made some observations in regard to it. My experience has been similar to old pastures. I don't exactly agree with Mr. Hagerty, the poorer the soil is, the more healthy the sheep are likely to be. I have had a little experience and I will relate it. I got some forty acres of thin land farmed nearly to death. I farmed the same piece of land more than twenty-five years ago and I have got it in grass, and the idea has always been to keep such lands in grass. I let that land remain nearly all this time; very little of it has ever been broken and I discovered that my sheep have no health on that land. Last year I pastured it very little with sheep. I have turned good, healthy flocks of sheep there. It lays high, where you think sheep would be healthy; they had been formerly. It has been a question with me to know the cause of it, and I had come to the conclusion that the land has laid too long and become infested with these parasites. I wintered a flock of sheep, and during the latter part of the season they began to run down. I still let them remain on the 40 acres of land, and against fall they had run down and were in very bad condition; yet I lost none of them until winter, when I lost a great many. I have some 20 acres of new land that has only been cleared some 3 or 4 years, and it is just over in another ridge in sight of the other. I have been pasturing the same sheep on that, and I have been impressed in noticing a great difference. These sheep that run in this new land have been remarkably healthy and thrifty, and I have come to this conclusion that we will have to go to work and break up all of that 40 acres before we can have good, healthy pastures.

A Member: Mr. Todd would like to have you give your opinion as to whether a small flock would do better than a large one, and how many sheep in a flock?

Mr. Todd: I said in my paper that I advised farmers not to keep too many. We do not keep to exceed 200; sometimes we get more, of course. The smaller the flock, the better they will do, unless you keep them on pastures similar to the way English people keep a large number of them on a piece of ground, and they clean every thing up and go on to another piece. They get around in about 2 weeks and begin over again. Something on the principle of small flocks.

Mr. Shaffer: Speaking about sheep cleaning up: I acquired a piece of ground that had run down, and everybody said—my father had been a pretty good farmer—you will never get that like your father's farm. But you would not believe what a change our sheep have made; any sheep would do the same. Where we had sheep enough to eat up all the weeds and they didn't get to blossom, they have thinned it out wonderfully; it is generally remarked the difference there is in that farm. The sheep did that; I didn't do it.

Mr. Todd: If you will salt the Canada thistles, the sheep will exterminate them as can be done in no other way.

At this point the institute adjourned to meet Wednesday at 9:30 A. M.

MORNING SESSION, WEDNESDAY, *January 13, 1892.*

The institute was called to order by President Levering at 10 o'clock A. M., who said:

Gentlemen: The time has arrived to renew the exercises of the institute. The first thing on the program for this morning is a paper upon the subject "A special rather than a general purpose breed of cattle," by O. E. Bradfute, Cedarville, Greene county. Mr. Bradfute is sick and not able to be here, but he has sent his paper, which will be read by Mr. Fleming.

Mr. Fleming: Mr. Bradfute sent this paper with the request that it be read. I am not very familiar with the gentleman's writing, and therefore may not be able to do justice to the paper, but I will do the best I can.

Mr. Fleming then read Mr. Bradfute's paper, entitled "A special rather than a general purpose breed of cattle," and which was as follows:

The careful observer could have seen rather a strange sight at any of our leading live stock exhibitions last fall. Two cows standing almost side by side; the one said to be about the best milk cow in the State, the other about the best beef cow in the State. The one so poor in flesh that a beef-producer would be ashamed to have her seen on his place, while the dairyman can see no earthly use in any man keeping such a useless cow as the other. In appearance they are so different that if we had a visitor from the moon and each owner in turn show him his animal and name it *cow*, our new visitor would be likely to remark to a third man that "those two men seemed to be laboring

under the impression that they had found a fool." So different are they in fact that many of those things which are considered elements of perfection in the one are very undesirable qualities when found in the other. Still stranger is the fact that these two cows have been fed, since they were calves, identically the same kinds of food and in almost exactly the same proportion. It is not our purpose at this time to enter into a scientific discussion of how these things can be. They exist as facts, and we accept them as we find them, the results of the "survival of the fittest," the modern highly specialized cow. So we have two great classes of cattle—beef and dairy.

Our subject, however, supposes another class, a middle or general purpose class, which some say belongs to both of the other classes; others say to either; and still others to neither. That such a middle class can not lead to the highest success it is our purpose at this time to show. While on the other hand, it is to the benefit of the general farmer to take up those breeds which represent that special object in which he is most interested.

Life is too short to deal with the world in general, and we must confine ourselves to some well defined line of action. This is an age of specialized ideas. The world is not asking for general purpose men, but men who can do *some one thing* better than any one else. Our colleges and universities are no longer dealing in general education, but urge upon every student the necessity of selecting some *special course*. A man is no longer asked to be a "Jack at all trades and master of none." Our machinery is all made with this idea in view. The successful farmer no longer raises a little of everything and a very poor quality of each but confines himself to some special line of produce.

This is but the outcome of the schooling of centuries of experience. And it has forced its way through the lives and beings of that class of animals over which man has control, better than one might at first suppose, and man finds himself to-day surrounded by animals peculiarly adapted to his many and diversified wants; but it is somewhat difficult to make them fit some other place. For example, a bantam rooster may be a "thing of beauty and a joy forever" strutting about the poultry yard, but he is a very poor excuse on a platter before a family of six hungry persons. A fox hound may be a valuable animal for a hunter, but he is very poor property for a shepherd. A Sunol may be a delight to a Bonner, but he would be slightly out of place in Terry's potato patch. A Bismou's Bell or a Pauline Paule would not bring over one cent per pound in Chicago stock yards, and a Lady Cecil or a Bonny Maid would be of as little worth in a New York dairy. Is the world, then, all gone wrong, and should cattle men apart from all others refuse to accept the general principles laid down by the world for its chickens, its dogs, its sheep, its horses and its men? Is it, then, a mistake to breed cattle for the special purpose of milk or beef? Let us examine into this general purpose case a little any way.

It is presumed that men raise cattle for money and not for convenience. And first we urge the point that it is impossible to maintain a general purpose standard, for as often as the market for butter or the market for beef changes materially, the standard will change. Your general purpose farmer always jumps where he thinks the most money is coming in. During the last few years of depression of beef prices many a man who had his herd graded up to the point where his cows would produce steers of a fairly good beef type, and is now laboring with all his might to convert this herd into good dairy cows, will, next year or year after, when beef cattle again command good prices, find himself like the dog after the rabbit, who thought he would be sure to catch it if he were only on the other side of the fence, and after a hard struggle finally succeeds in getting over just in time to see the rabbit slip through a crack in the fence to the other side. Each of you can go home and count your neighbors by the scores who have kept up just such a race for twenty, thirty or even fifty years, and to-day they have a class of cattle the cows of which sell for \$20 to \$30, because they are only moderate milkers, and their steers sell for three cents a pound because they are only moderate beefers.

Such has always been the result, and always will be so long as it is possible in six years, or three generations of cattle life, to use a bull of such character on a herd of the

finest dairy cows, as to produce a group of cows that will not give milk enough to nourish a lamb; or on the other hand, to use a bull of the opposite type and from the finest beef cows in the land produce steers which will not bring two cents per pound in our stock yards.

With these statements in view the general purpose class of cattle are a hindrance rather than a help to the highest attainments in cattle life. Our general purpose friends will pardon the statement, but I must tell the truth, and say the common scrub cattle all over this land are the result of a century's experience in producing general purpose cattle. They are either that or nothing—may be the latter. The highest attainments in cattle life have all come through the special breeds. You may represent cattle life as two long ladders set up in the shape of a V, one leading to highest milk possibilities, the other to highest beef possibilities. They are in common at the bottom, but they widen so much at the top that no animal or class of animals can ever hope to place her feet on the top round of the one ladder and her hind feet on the top of the other. However, do not let me lead you so far as to believe that the one class can leave the other entirely. The milk cow must have some muscles in order to move from place to place, although I must confess that she is getting pretty close to a frame work of bones with a hide stretched over it and filled with machinery for the conversion of food into milk. The per cent. of edible meat in her case is getting pretty low. Neither can the beef cow entirely overlook at least enough milk to nourish her calf. Beef men have not yet reached that point where it is either convenient or profitable to use the "wet nurse" system. I believe the typical beef cow should be able to reproduce herself, and to do this she must be able to furnish sufficient food for her calf until it becomes of sufficient age to take other nourishment in such quantities as may be necessary to keep up rapid growth and production of flesh. However, it is not necessary that she be a Shadeland Boon 2d, for I fancy that 123½ lbs. of milk daily would alighty distort the shape of a typical beef calf. Nor would she need to keep up her milk record to the extent of 30,318½ lbs. a year like a Pietertje 2d, as the calf would likely become discouraged before the year was up.

There are plenty of splendid milk cows in almost every herd of beef cattle, but I would call your attention to the fact that neither they nor their descendants are generally called upon to wear the honors in a show yard of beef cattle. I was once careless enough to allow myself to serve on a committee to judge Holsteins at an important local fair, and after the show was over the fellow who got left had the kindness to inform me that any fool would have known better than to select a heifer showing as many beef points as the one I had selected. That man is an admitted good judge of Holsteins, too.

Let us now look at a few specific examples and see how our general ideas come out. In a recent number of the *Breeders' Gazette* we have the following note from the Chicago stock yards: "Blood tells! The difference between the selling qualities of the old-fashioned cattle and the pure-bred was strikingly exemplified last Friday in the sales of twenty head of the former, averaging 1,852 lbs., at \$4.25, and eight head of the latter, averaging 1,611 lbs., at \$7.15. The latter were Polled Angus. Here is a difference of \$36.47 per head in favor of the high grades." Now let us analyze this statement a little. It will be noted, first, that the \$4.25 cattle averaged nearly 250 lbs. each the most, indicating that they were from six to twelve months the oldest. Moreover, that age and class of cattle, according to actual results of careful feeders, would take about as much more feed to fit them for market as it did in the case of the \$7.15 cattle, making in reality about \$70 per head difference between the two grades of steers. Now it is not at all improbable that the dams of the cheaper steers are better milkers than the dams of the better steers, but had it occurred to you about how much butter of such quality as you could get from one of those cows it would take to make a net profit of \$70 per year on her?

This is not an overdrawn case. How many in this audience who do not keep the special beef breeds are producing steers that will weigh 1,500 lbs. at two years of age or will bring over four cents per pound at the stock yards? If you are not producing better steers than that, then your cows must each make you a net profit of over \$30 a

year from her milk or you are losing money, for you might have cows which will produce 1,500-lb. steers in their two-year old form and sell at 6 cents per pound.

But you don't raise steers to feed; you sell them as calves to feeders. Well, I feel sorry for both you and the feeder. You are both getting left. You are breeding your cows with a milk idea all the time, and no man can make a success with the kind of calves you sell him; and you should find cows for the special purpose, which will give you three times the net profit you now get; so you could afford to knock the calves in the head and still make more money than you are now doing.

Right here let me say that one of the principal obstacles in the way of accepting the special purpose dairy cow is the disposition of her bull calves. There seems to be but two methods generally accepted—one is to knock them in the head, the other is to feed them by hand until old enough for veal and then sell them to butchers. Either method is more profitable than growing them into 2-cent steers. The average general purpose cow kept by the Ohio farmer will not produce 200 pounds of butter per year, for which the average price obtained is less than 20 cents per lb., or \$40 a year. She would not have to be a very wonderful special purpose cow to produce 300 pounds of 30-cent butter or \$90 a year. The cost of feed and labor being in each case the same, we have a net difference of \$50 a year. Suppose each of those cows is kept for ten years, and you have a difference of \$500 in favor of the special purpose cow. Can not the owner of that cow afford to knock the bull calves in the head?

But here comes one of our general purpose friends who tells you that he is producing these better kind of cows. Perhaps he is, but I give it as my candid opinion that in just the proportion he is advancing in dairy achievements, in just the same ratio is he retrograding from the beef standard. That cow is no longer a general purpose cow. I leave it to the American show yards and the fat stock markets to vindicate the statement.

It can hardly be said that the subject has been gone over unless the modern pet, the general purpose Shorthorn cow, has been touched upon. Let that question be put in such a shape that it will answer itself. Suppose you go to Chicago and spend a week at the Dexter Park sales of pure bred cattle, during the sale season. You will note one fact that whenever a large, well-bred beefy cow comes into the ring, even though she may have scarcely any udder, she goes under the hammer at \$100 or over, while when a large, fine udder comes in, bringing a fairly good general purpose cow with it, the whole business, udder and all, brings about \$50 or less. You will come home thoroughly convinced that there is at least one class of Shorthorn men raising cattle for convenience and not for money.

Now, in closing, let me say that if you are going to keep cattle with success, I believe you should decide upon one or the other of the two great fields of beef or milk, and then get cattle to suit the field. You have a number of breeds in the milk field from which to select, notably, the Holstein, Jersey, and the Red Polls. The latter on account of their hornless heads, and their recent milk and butter tests at the Ohio State Fair are rapidly gaining popularity. In the beef field you have about an equal number of breeds from which to select, principally the Shorthorns, Herefords, and the Polled Aberdeen-Angus. For myself, I prefer the latter, not only on account of their hornless qualities, but from actual tests in the feed yard, where on the same feed they not only made a greater gain, but when ready for market found more buyers and commanded a higher price than either of the other breeds. They are to-day commanding a higher price than any other beef breeds, both in this country and in England, not only at breeders' sales but at the stock yards as well. Having selected your breed, stick to it through thick and thin, and the time will be hastened when the milk from our dairy cows will be cream and the cream will all be butter, and our beef cattle will all be young and fat and their beef will be juicy, sweet and tender.

President Levering: According to the program, this paper is to be followed by a discussion, to be opened by Mr. J. McLain Smith, who, as is

known to all of you, is the champion of the general purpose cattle. Mr. Smith, I believe, is not present. He was expected here, but has not reported. If there is any gentleman present, who has heard this very interesting paper, and desires to make any remarks by way of criticism or discussion, we will now be glad to hear from him.

Mr. Foster: I am sorry Mr. Smith is not present, as we had anticipated an instructive talk from him. I see, however, that Mr. Gilbert, of Richland, N. Y., is with us, and I am sure we will all take it as a favor if he will give us the benefit of his experience on this subject, without trenching on his paper.

Mr. Gilbert: While I have prepared no paper, yet the few notes I have made, and which is the next subject to claim our attention, "The Dairyman's Cow and her Keep," will be in the general line of the subject now under discussion.

Mr. Foster: I thought you could say a few words without trenching upon your paper, was my suggestion.

Mr. Gilbert: I am a believer in general purpose cows. You take our dairy cow of to-day and it is wholly an artificial animal made by the intelligent breeder. She was taken from an animal that scarcely gave milk enough to keep her young for a short time and has been developed into the typical cow of to-day. I shall indorse a good deal that this gentleman has said in his paper in relation to keeping a beef cow and breeding for special purpose. I think that is the line that all farmers are working for. You take the example of the horse. If a man wants a draft-horse, he doesn't go and buy a trotter. The same principle applies to cattle. If we want milk cattle, we have something that is difficult to fatten, in fact our best dairy cows are almost impossible to keep up and keep in condition. Our very best milkers are the worst looking so far as condition of flesh is concerned. You take a cow which takes on flesh readily and she puts her fat on her back instead of in the milk pail. She is not a profitable animal for the dairy. We can still go further than that. There are two classes of dairy cows; one is the butter and the other is the milk cow. You can produce milk from one at a profit while she would be a loss in the butter dairy. On the other hand there are plenty of cows profitable in the butter-dairy that don't give milk enough for a milk-dairy or for a cheese-factory; hence the dairyman must adopt the animal best suited to his business. You don't want a beef cow for milking, neither do you want a dairy cow to fatten. Neither will be profitable, but they are all right in their special spheres. I have a few hastily prepared notes that touch upon this point in the paper which I understand I am expected to deliver.

President Levering: Any other gentleman present who has any thing to say upon this paper which has just been read?

Mr. Foster, of Champaign county: Mr. Chairman, two or three years ago I made some figures which may be of some interest on this subject. I had a cow that averaged seven pounds of butter for a little over ten months, and upon inquiring of our grocers in Champaign county, I found that the average price of butter every year was fifteen cents a pound; 280 pounds in ten months would bring \$42.00 from that cow. Her calves, I could very readily sell at six months for \$16.00, that would make the year's product from that cow \$58.00. Now, of course you have to take from that the cost of feed and pasturing. Her milk is fine, and her butter of the best quality. If I put a test on her and feed her as special cows are fed, I think I could increase her weight four or five pounds, and she just gets the average feed of an ordinary farmer's cow, no shelter beyond that given to the other cattle, plenty of corn, fodder and clover hay. Twice a day she is fed chopped corn and oats, and in the summer she runs on blue grass. I didn't commence feeding her until about a week ago—until this first snow came.

A Member: I would like to ask Mr. Gilbert how much he finds can be produced, on an average, from a dairy.

Mr. Gilbert: Taking the figures of the Dairy Commissioner of New York, if I recollect, the average was about one hundred and twenty-five pounds—may be one hundred and fifty pounds. That was however two years ago. The figures made by our State Dairy Commissioner showed that our cows were only giving about 3,032 pounds of milk annually. Those were the estimates from his agents in each county. Taking the figures from all of the cheese factories and creameries of the State, the average production of butter was less than one hundred and twenty-five pounds, while we have many dairies there that produce two hundred pounds, and we have many dairies of milk cows that give from eight to ten thousand pounds a year, and yet the average is only 3,000 pounds. A good deal of that comes through the careless dairyman in keeping animals that never were profitable for any purpose and not understanding his business.

Mr. Foster: The butter produced from this cow, I referred to, I contract that butter now at twenty-five cents and agree to deliver seven pounds of butter to a family once a week. I can do so without any trouble. For a few year's I have sent butter to a sister residing in Cincinnati, and she paid me thirty-five cents a pound and paid the expressage, but I don't wish to produce any more butter than my own family can use. Of course there is sometimes necessarily a surplus, but there are families living near my place that take the butter at twenty-five cents the year

round, and I can easily get this price the year round, when in the larger cities fifty and sixty cents is paid certain seasons of the year.

Mr. Gilbert: I met a gentleman only last week in Lucas county, this State, who keeps a small dairy of twenty-five cows. Now he keeps the butter cow; he is making butter for a living. Last year he sold from these twenty-five cows 6,700 and some odd pounds of butter, and during the last week of December his average per week was five pounds and sixty-five hundredths. Many of them had been milked nearly a year and the cost of that butter during the last week of December was only twelve and one-half cents a pound. He was feeding about fifteen pounds of corn ensilage, about five pounds of mixed hay and five pounds of shorts, with a supplement of grain ration. Yet, these cows, the last week of December gave him an average of five sixty-five hundredths pounds and in figuring the cost of his feed and the market value of his food, it was costing him less than twelve and one half cents a pound. He had the special purpose cow. These cows he had been selecting for several years, weeding out those that would not make butter at a profit, and the result was that he had a fine dividend paying herd.

Mr. Baker: Mr. President, I am very sorry that my friend Mr. McLain Smith is not here, because he is so well posted upon the general purpose cow that a talk from him at this time is very interesting. I can take him by the hand and agree with him in all his statements with one exception. I don't believe in the statement that there are some persons who stretch the truth a little too far in speaking of the special purpose cow. Generally speaking, most men in their statements, I think are correct and make them conscientiously, but I don't believe Mr. Smith gives them credit for the same frankness that I do. I would make a little more severe test, but at the same time I believe in the general purpose cow. I believe that the general purpose cow can be made the most profitable. The best cow I ever had descended from the Duchess of Arford. That cow was always in good flesh when she was dry. She would run down some in milk, and I have milked that cow ten months, with a fair average. I don't believe in extremes in any thing. You may get a general purpose cow that will lead off like "Mary Ann" or "The Princess" or other animals of that kind, but that is not what the general farmer wants. The general farmer wants a fair average, whether for milk, butter or beef. Of course, the fatter they are for beef, the better. Now, so far as the general purpose cow is concerned, the shorthorn is my favorite. I know the shorthorn as a beef animal may have some disadvantages, and other animals could be raised at more profit for that particular purpose. Other animals are more hardy and more capable of taking on flesh under some circumstances than the shorthorn. If we were discussing the

question of grazing, I would prefer another animal to the shorthorn, but when we come to tie up two steers together, I don't see there is any disadvantage in the shorthorn.

But for a general purpose cow, I claim we want an animal of beef form. Short legs, broad back and good constitution, their feet standing apart so that there is room for the vitals to have good play. I believe first in that, and then I believe if you mix with this a good shorthorn milker, you will have a cow not only that will be a good milker, but also of good beef form; a cow, that will fatten in a very short space of time after she is dry; a cow that will be in flesh in two or three months. Now, as to such cows being useless after they are dry, I can not see the force of that argument.

Some years ago, I had two shorthorn cows to fatten, and a steer to fatten at the same time that was not shorthorn. When I sold the three, one of the cows weighed 1,800 and the other 1,456, and the steer weighed something like 1,600 pounds. I sold them for nine dollars and a fraction over 100 pounds by weight. One of those cows was eight years old, and the other was five years old. They had been good milkers, both of them, one of them particularly; one of them took a \$100 premium at our State Fair, and also at the Northern Ohio Fair. I think that it is a mistake that a great many make in attempting to get a general purpose cow out of an animal of narrow form, thin neck, long legs; I don't believe in that. I say, if you want a general purpose cow, get one of beef form and then bring it up to a good milking standard, and you will have the right foundation for a good, general purpose cow. My experience has been where you want to increase the capability of a cow as a general purpose cow, you must be sure every time to get her from a good milking family, not only the mother, but good milkers on back in her ancestry, and the further back you can get, the better it will be; and in this way, I think, we can secure a general purpose cow which will prove to be a favorite.

Mr. Gilbert: You will find these typical model cows in every breed, but if a dairyman starts out to dairy for profit and goes to the shorthorn for dairy cows, he will make a mistake. He is more liable to get what he wants by going to a special breed; that is, cattle bred for a purpose. Where you find one of these typical model cows, you never saw them have a calf that was worth a cent in the milk dairy. You can find special individual cows in all breeds that are typical dairy cows, but they are not the cows from which the dairy-man wants to breed. The best cow I ever owned was a thoroughbred shorthorn, and still she never had a calf worth a cent in the milk dairy.

A Member: I would ask Mr. Gilbert if he bred that cow to a bull of good milking family?

Mr. Gilbert: I bred this cow to a thoroughbred Jersey and her mother was a good milker before her. On the other hand, I had another high grade shorthorn that I bred to a thoroughbred Jersey, and some of the best cows I ever owned came from that animal.

A Member: Perhaps the strange blood might interfere?

Mr. Gilbert: In buying cows for a dairy, you buy them for a special purpose. A dairyman makes his living from the milk or butter of his dairy. It is safest for him to buy those animals that have been bred for a purpose; while you might get an individual cow in some particular instance that might excel, yet in the long run I think the only safe and sure way for the dairyman to do is to buy that class cow.

Mr. Oxer: Mr. President, I am a believer in the general purpose cow for general purposes, that is, for everybody. Of course, there are a few persons that can afford to have a special purpose cow, but take the general farmer, they can not afford it. They must have a general purpose cow.

I wish to add a few words in relation to the shorthorn. In 1854 my father bought three heifers, and they all proved to be good milkers and good butter cows. We have kept that strain from 1854 up to the present time. We still have a strain of cattle we bought in 1854, and through all that time from 1854 up to the present time there has been very few poor milkers and poor butter cows in that strain. They have proven good milkers and good butter cows all the way through, and very good beef cows also. The result has been, we have kept them clear through, thus showing that in shorthorn breed there are cows that will hold up their beef making qualities very well, and also their milk and butter qualities.

A Member: Mr. Chairman, I have had a little experience with the shorthorn animal, but I never had one yet that I really could consider a general purpose cow. If they were a good beef animal, as a milker they most generally failed. Their tendency, when crowded, is to convert the food into beef rather than into milk. I have a most excellent general purpose cow, but she's not a shorthorn, she is a Holstein. She will weigh about 1,200 pounds generally when she is in milk, and when she is dry she will weigh 1,400, or perhaps more, and she's not dry very much. I keep her for milk, and I get it—I get about twenty quarts a day, but I feed her heavy. I can feed her as heavy as I mind to, and it does not go to beef, but it goes to milk.

Mr. Green: I am a believer in the general purpose cow and also in the special purpose cow. I think there are instances in which both are practicable. Where a man has one object in view, I think he ought to have a special purpose cow for that line, and we have many farmers throughout the country who have a special purpose in view with their cattle. There are instances where they can not engage, especially in pro-

ducing butter to advantage, nor can they produce milk or beef alone. We have many farmers that are so situated as to be removed from railroads or from towns where they can secure a ready market for the product of the dairy, and they have to have a certain amount of milk and butter on the farms, and they also want to have young cattle to grow up on the farm, and I think where they are so situated, a general purpose cow is the most practicable. Because she will give a sufficient amount of milk for the family and make a sufficient amount of butter, and her calves can be raised to profit on the farm. Where, if a man engaged in a special line, either in butter or milk or beef, he would be compelled to look to some other source for some part of his products. He would either have to look to some other special line for his butter and milk, or he would have to look to some other line for profitable steers and calves that would grow up on the farm. If I would turn my attention entirely to the production of milk or butter, I think I would select a special purpose animal, and I think for beef production I would choose the shorthorn.

President Levering: Perhaps we have spent all the time allotted to us for the discussion of this subject. To show how opinions differ, I heard a very eminent breeder not very long ago say, that the best cow in the world was a cross between a short horn and a Guernsey. We have been highly entertained by this discussion but we will now have to pass to another subject somewhat kindred to the one just under discussion.

The next thing is a paper entitled "The Dairyman's Cow and Her Keep," by Mr. William H. Gilbert of Richland, N. Y.

Mr. Gilbert then said: We have "cows and cows." We have the dividend-paying cow, and the unprofitable cow, the beef cow and the dairyman's cow. The beef cow, bred and fed for generations to convert food into beef, may respond for a short time at the pail, but she is not a profitable dairy cow. The latter converts her food into milk for the market, for cheese or butter. She may be profitable in the milk dairy and not profitable in the butter dairy. She may be a good butter cow and not give enough milk to be profitable in the milk dairy.

Each dairyman should select the cow adapted to his business. Next look to the environments. If we expect a cow to do well we must provide a comfortable, pleasant home. Her stable should be warm, light, clean and well ventilated. She should have all the pure water she wants. Milk is 86 parts water. Health requires pure air and pure water. Regularity and promptness in feeding and milking should be observed. Irregularity in these things materially reduces the product and increases the cost of keeping. Success or failure is determined by the care we give our cows. We can't keep our animals healthy unless they have fresh air and pure water. I will say right here that it is impossible to make a good

quality of milk or a good quality of butter, or make even a fair quality of butter unless your animal is perfectly healthy. In order to accomplish that, she must have fresh air and light and pure water. Regularity and promptness in feeding and milking should always be observed. Milking and feeding at irregular hours naturally reduces the quantity and often increases the cost of keeping our cows. I have had an instance of that within the past year. Being away from home a couple of months last winter, I returned home and found, from an examination, that I was not getting butter enough from the dairy. I also found that my cows had been fed on an average of about ten pounds. Their principal rations were ensilage supplemented with beets and oats ground together and wheat bran; giving them an average of 10 pounds per day. Upon going to the stable I found at once that the cows were not looking right; been neglected some way. My men had been with me a long time and understood it, but they had neglected their work. I kept three men. I discharged two and put in a green hand and reduced the feed to five pounds per day. I had been getting an average of four pounds per day of butter. In ten days' time the cows not only looked better, but I was getting five pounds of butter every day, with one-half the grain rations.

This came about simply by milking at regular hours and feeding at regular hours and proper care. I learned afterwards that the trouble was that they milked one morning at six and the next morning at eight. That is one of the important things about a dairy, to see that the cows are milked and fed regularly. Milch cows are voracious feeders, and care should be observed that they do not get more than they can digest and assimilate. The feeder is the ruling man in the dairy, that makes the dairy profitable or unprofitable. If you give a cow all she will eat, and if you carefully watch their droppings, you will often find that one-half and even more of the food passes through the animal undigested. In that case you lose the food and the animal is injured thereby. No animal can eat for a long time and pass their food through without digesting it and be healthy—certainly not profitable. The proper course is to feed just what they will eat and assimilate.

Too liberal rations of concentrated food often result in a double loss—in food and in health of the cows. No animal can be healthy if it eats more than it digests. The principal part of a cow's rations should be bulky food—hay, ensilage, fodder, etc., supplemented with a proper proportion of concentrated foods, such as grain, mill feed, oil meal, etc. As a rule there is not much profit in feeding more than one pound of grain to 100 pounds of the animal. The skillful feeder, by studying the habits and wants of his animals, will make an ordinary cow profitable.

I have found, in feeding dairy cows for a series of years and weighing carefully, that I could get more money by limiting the food than I do by feeding too liberally. I have found that a 1,000lb. animal very seldom—while there are individual animals that will eat double that amount—but as a rule a 1,000lb. animal, with what bulky food she requires, very seldom eats and digests an average of over ten pounds of grain.

A Member: You mean per day?

Mr. Gilbert: I mean per day. Prof. Robertson, of Canada—and I think the best dairy authority to-day among any of our experimenters—told me within the last month that for the last three years he had made the maximum ration of a dairy cow about seven pounds of barley, oats and wheat, ground. He found he could get more money from that than by feeding some animals sixteen pounds. He got less money when feeding a cow sixteen pounds than he did when he was feeding the same animal seven—that is for a long period. He found that the large quantity of food tended to diminish in quantity the milk, while by exercise of economy in feeding he was able to increase the quantity.

A Member: How often do you feed grain?

Mr. Gilbert: I feed grain twice a day. Our principal rations are corn ensilage and grain in the morning, clover hay or mixed hay at noon, and grain and corn ensilage at night. The noon ration is very light; not more than four or five pounds per day. Take a cow that is not considered a very good one; by skillful feeding you can bring her up so that she will make you a profit out of the dairy. In this line I will say that a short time ago, in some agricultural paper, I saw where a man was weeding out his cows, and he took his poorest cow and went to feeding her for beef, and the first thing he knew she was the best cow he had. He simply did not understand his animals. No two animals require the same amount of food. He should be careful in changing their food. You take an animal and feed them one kind of grain and one kind of food and make a radical change, and in ninety-nine times out of 100 they will sustain a back-set, even if you are feeding them more; sometimes it takes them a couple of weeks to get accustomed to their food. Any man that has fed steers for beef will understand that thoroughly, "that in making a radical change of food he will always meet with loss." So that in changing his food he should get as near the same kind as possible.

It is not practical to formulate a ration that will suit all cases. General rules must be observed in giving the proper nutritive ratio, but as our principal rations vary so much in quality, the herdsman or feeder must use his own judgment in the preparation of rations.

When we have to purchase this supplementary food its manurial

value must be considered. When practicable, we should bring on to the farm foods that will enrich the soil.

There are many foods that may be brought on to the farm that have their food value and also a value as fertilizers. You take cotton-seed meal and it has a fertilizing value of about \$23 per ton, whereas its food value is upwards of \$40 per ton. For the milk dairy, I have found it to be one of the most profitable foods I have ever used. But it demands careful feeding. It will not do to feed it to excess. In feeding for butter an excess of cotton-seed will always give a hard, tallowy butter. But it is a profitable food, mixed with corn ensilage. That, mixed with corn ensilage and wheat bran, and with clover hay, daily rations, is almost a perfect food for the ordinary dairy cow.

First formulate our foods so as to produce what we want at the least cost, with the fertilizer value constantly in view as a secondary consideration.

After years of experimental work it has been shown that a 1,000 pound cow requires about eighteen pounds of hay per day, or its equivalent, for maintenance, and that it requires six pounds above that amount per day to produce 125 pounds of butter a year—the average production of the cows in the state of New York (Brown's Report). If the cow consumes only twenty-four pounds, then twenty-five per cent. goes to butter production. Now if we add another six pounds of food, and the cow digests and assimilates it, she will give us 250 pounds of butter. The second 125 pounds of butter have been produced from one-fourth the food required to make the first 125 pounds. If the skillful feeder can get his cows to eat and digest thirty-six pounds of food daily, then fifty per cent. of her food goes into butter, but if he feeds thirty-six pounds and the animal assimilates only thirty pounds, he not only loses the six pounds of food, but he will get less product than from the thirty pounds.

Thus you see the importance of the herdsman understanding the individuality of his cows. While one cow may stand a large ration, the one standing right by the side of her can't digest over one-half as much. I have seen cows that would eat all that you could give them, still you could not increase the quantity of their milk. They would assimilate about so much and the balance passed off unassimilated. When you find a cow in excess of what she digests, it is only a short time before she is a loss; she will fail to give as much as she would with less feed. This shows the importance of knowing not only the quality of the food, but the capacity of the cow. Many of our cows are kept at a loss by being overfed with improper food. What I call improper food in feeding, is feeding too much of one kind. You take a cow for instance, and feed her ensilage, and you add corn meal to it, and the most of it is thrown away.

And by feeding a cow too much carbonaceous food, she will soon get to taking on fat, instead of depositing it in the milk pail.

In feeding, the object should be to get the greatest net returns. To do this, we must study the habits and characteristics of our animals, the conditions that surround them, and the quality of the foods we have, and we should vary the food to suit the circumstances. When cows are exposed, or the weather is cold, we should add more heat-producing material to the rations; when the weather is mild and warm or they are in a warm stable, give them less of this carbonaceous food. The nutritive ratio can be varied profitably from 1.5 to 1.8 and can be regulated for cheap production. We can not control the market, but we can control cost of production.

There are many farmers throughout the country, that feed for reduction, while on the other hand his neighbor will feed for profit. Both start in with their barns full of feed, hay and corn. In the spring one man's food is all gone, and he has no money to show for it. His cattle are in no better condition than in the fall. On the other hand his neighbor, by feeding carefully, by formulating his rations, is getting money always, getting it from the growth of his animal and from the dairy. Both start out with the same amount; one in the spring has an empty barn and no money, his cattle not in as good condition as in the fall; the other has money and his cattle are in better condition than ever. In other words, one has fed for reduction and the other for profit. That you will find all over the country, not only in dairy regions but also where cattle are raised for beef. The man that keeps a lot of steers over winter, in order to fatten them the next summer, makes a mistake. He is feeding for reduction.

Test your cows. Understand the values of your foods. Don't give a 1,000-pound cow enough for a 2,000-pound cow. The scales will give you the quantity, and you must test the quality. We must give a wider ration in cold weather, and give more of it. Raise the principal part of the foods consumed. For feeding with corn, ensilage and hay, I would suggest peas and oats ground together, equal weights. This is a good food and economical, for the production of milk. When oats are high substitute wheat bran.

In these times of competition, we must produce our product cheaper and for less money, than can be done by indiscriminate feeding and care. We must select animals adapted to our purposes, and then feed them with that object in view. And in that way, in reducing the cost of productions, you will find that nineteen out of every twenty times you will raise the standard of your product. That principle will apply certainly to the dairy. By skillful feeding the dairy cow will produce more and at the same time the product will be of a better quality. We can not control the

market, but we can control the cost of production. For the dairyman, there is one thing he must do if he expects to make any money. First, he must know what his cows are capable of. If he is in the milk business he must watch the quality of his milk; if he is in the butter business he must test the oil; see how much fat can be made. In breeding our dairy cows, we ought to aim to mature them young. I find that the young heifer that comes in at twenty to twenty-four months old, becomes a good milker much quicker than the cow that comes in later, and makes her a much more profitable animal, than one that has gone till she is three years old. The one that holds over is very apt to take on beef fat; and then you lose one year of the cow. The early developed cow as a dairy cow is the most profitable.

At the conclusion of Mr. Gilbert's remarks, a member asked the following question: I wish to ask Mr. Gilbert one question. He stated in the change of hands in the stable that he increased the product from his cows from four pounds to five pounds. He didn't say whether per day or per week.

Mr. Gilbert: You either misunderstood, or else I was unfortunate in my expression. That was caused not by changing hands, but by changing food and care. That by the change of food and care it was increased from four to five pounds a week. The increase was caused by better care, by regularity in milking and feeding.

A Member: Mr. Chairman, I would like to ask Mr. Gilbert if he would recommend feeding ground corn to dairy cows?

Mr. Gilbert: For dry food there is no food anywhere that makes the quality of milk and butter that corn and oats do. Where you have corn ensilage, and have it rich in corn, you will get all the corn you want there. I have had the best result from cotton seed meal and wheat bran of any thing that I bought on the farm; but the food I aim to give the most of and to raise are beets and oats, supplemented with a little bran, and mix it up. That is the most economical food that I have ever raised on the farm. If I was feeding hay, corn would be my principal ration, but I should want to lighten it up if I was feeding ground corn; I should certainly grind the cob and all. You can get as much milk out of 100 pounds of corn and cob meal ground fine as you can out of 100 pounds of clear meal, and I would rather have it to-day. If you would give me my choice between 100 pounds of corn and corn cob meal thoroughly ground and a 100 pounds of clear meal, I can get more money out of it, or as much as I can out of 100 pounds of clear meal.

Mr. Todd: Is the cob ground digestible?

Mr. Gilbert: I reckon it is. The cow relishes it. There is an element on the corn cob that the animal wants. Of course, I would have it

ground fine. There is something about the corn cob which the animal seems to need. I have taken my corn to mill before now and have it ground and bring the cobs back and throw them into the barn-yard, and after a few days I would find that the cobs would be eaten up by the animals, and so I tried the experiment of grinding the cob with the corn and have found it to be a success. For the last eight years I have not had a bushel of shelled corn ground for the animal, but have had it ground cob and all. There is an ash in it that the animal requires; there is some sort of an element in this cob that is required for animal growth. I don't know what it is; I am not a chemist; but I know that the animals like it and must have it.

Mr. Todd: My idea has been in reference to this corn cob—and it comes right up in connection with the discussion we are now having—that there is too much attributed to the corn cob as food, and too much attributed to the nutrition which they contend it contains. Of course it is very beneficial, as every man can see, and as I think I explained yesterday, to put the food in the best condition for digestion. It is very valuable in that way, but while it may aid digestion, there is very little of nutrition to be found in the corn cob. Why I asked if the corn cob was digestible is this: I know that there are particles connected with the corn cob that are indigestible, and they go into the stomach and have to pass out without being digested, and I think every thing that is taken into the stomach, which the stomach can not digest, produces more or less inflammation there. I think the point is right here, that the value of a meal as ground with the cob may be enhanced. As my friend has said with regard to the ashes in it, there may be something in that, but I think the main value comes from the fact that the corn cob ground in with the meal tends to separate or hold apart the corn meal so that the gastric juice flows through it readily, and this brings about good digestion, and I think there is where the value is. If we would use bran in place of that, I think the result would be very much better still.

Mr. Gilbert: In grinding the corn with the cob, it must be ground very fine. Of course I will admit that it passes through undigested when ground coarse, but when ground fine, as fine I mean as would be ground for table use, you will find there may be portions which pass through, but they are not perceptible to the eye. There is an element—ash or something—that the animal seems to need, and it is too profitable to throw away.

A Member: Mr. Chairman, I would like to ask Mr. Gilbert whether he thinks the amount of butter fats in milk can be changed by the character of the food, or whether the character of the milk is dependent upon the character of food or not?

Mr. Gilbert: I think it is; I know it is. I know that the man that does the feeding has a perfect control over the quality of butter he makes. It is the feeding that makes the quality. I know that some particular scientists say that you can not change the relative value of fat—you can not change the butter fat of milk—but I will say this: I don't know whether that is so or not—but I can go into my dairy room and from an examination of the butter, tell when they are feeding cotton seed meal and when they are not. I can tell it from the fat that will adhere to the milk pail, and I find that certain kinds of food give me a better quality of milk than others. I am not a scientist and never analyzed milk, but my opinion is that you can change the quality of your milk by food.

President Levering: If there is nothing further upon that subject, we will pass to the next exercise upon the program which is entitled "Ohio's Live Stock Exhibit at the Columbian Exposition in 1893 and How to Secure it," by Mr. D. L. Wadsworth, of Lorain county, who, I understand, is commissioner of live stock.

Mr. D. L. Wadsworth then came forward to the platform and spoke as follows:

MR. PRESIDENT AND GENTLEMEN: I guess I belong to the all round or general purpose animal. [Laughter]. Since I have been notified by Mr. Bonham that I was expected to be here to day and address you upon this subject, I have been called upon to take some part as one of the committee on building of the World's Fair, and as chairman of another committee which has made it necessary that my time should be largely occupied in other directions, together with sickness in my family, has prevented me from preparing myself upon this subject as fully as I otherwise should have done. Therefore, Mr. President, by reason of other duties, I have prepared no paper to-day, but what little you will get will have to come from the general store-house.

It seems to me that this question which I have been selected to bring before you, is a little perhaps out of the ordinary course of your gatherings. However, it is one of those questions, which to the stockman of Ohio, the greatest State in the Union for all-round service and for all-round wealth, it is a question of great importance. The breeders of Ohio, in the past few years, in my judgment, have lost something in the way of sales to the great west, and to the south, from the fact that they have allowed the progressive States of the west to take from them the sales which they should have retained to themselves. This is a great question. The question is now, can you redeem yourselves as Ohio breeders at the Columbian Exposition, and if so how is the best way to accomplish that? It seems to me, gentlemen, that it is possible with the great resources of Ohio, that the character of the stock breeders and stock growers of Ohio,

that the energy which the Buckeye always puts into his business, makes the live-stock man of Ohio able to go to the Columbian Exposition and maintain his position in the front rank. [Applause.] I would dislike very much to see Ohio placed back in a retrograde position. Ohio should stand in front in this industry as she stands to the front with our great men. No State in this Union can place so many gallant names, so many great names, so many valuable names in their history, as the great State of Ohio. I care not whether it is in military or civil life. We have come—we citizens of Ohio—from a hardy race. Ohio, as a State was one of the worst, perhaps I might say, to subdue of all the States. The great forests on the north had to be felled, and the descendants of that sturdy race have produced the names we find inscribed on the great roll of fame all over this country. We can scarcely take up a paper and find any man who is elected to a high position and trace him back, but that we find he originally came from Ohio. [Applause.] That is true.

Now what I want to do in endeavoring to promote the live stock interests of this State is to get you gentlemen to help advance these interests and to see to it that you go to work, not next year, or next month, or next week, but now—now at the present time, go to work and prepare yourselves to present at the exhibition at Chicago the best show of stock of any State in the Union. I believe you can do it, although you have hard work before you, but you can certainly present a creditable showing and you ought to do it. Now it is perhaps in order to suggest how I think this can be done.

Now this is a great question, Mr. President, and that question should not be settled by one or two, but should be settled by all of you who are interested in stock breeding and stock growing. You are its representatives and ought to know what you desire. For me to tell you what you want, would be out of place perhaps. However I have my views and I will present them. In the first place, it is going to be necessary for Ohio not to be niggardly in her appropriations to pay some premiums at the Columbian Exposition. [Applause.] I know we will be met at the threshold with this argument—I have met those who are presenting it already—that if the stockmen of Ohio have premiums awarded to them, or assistance offered to them in making a creditable exhibit, the machine men and manufacturers, who go there at more or less expense, will claim that they should be on an equality with the stockmen and have premiums offered. To my mind, one simple fact ought to answer that question, and what is that? They are all of them in almost every instance protected by a patent and they are there not in competition as you, the stockmen are, in competition with one another all over the state of Ohio, but they are there to build up a specialty, or in other words as has been suggested

here this morning, for a special purpose and not for a general purpose. Their purpose is to make some money for themselves, advertise their specialties on which they are protected by these patents, and therefore they can afford to do it at their own expense. They say they are at great expense. So they are, but the remuneration as we all know by reason of patents is also very large. Now then the stockman can not go to the Exposition without each and every hour, each and every moment of time, incurring a large expense to feed, shelter and care for his exhibits, while the manufacturer is put to no such expense.

My idea is this—that premiums should be awarded outside of national premiums to our stock breeders and growers, that our legislators should be prevailed upon to set apart or to appropriate sufficient funds so that under protection of a state board premiums may be paid. I don't mean large premiums, but premiums might be extended over as much ground as possible so that every man who went there with his stock, while he might feel perhaps that he could not compete with the best breeders and growers of the land, yet he would be willing to compete with his neighbor who lives in Ohio, and by so doing he would feel that he might perchance get a little remuneration for his services from the premiums which he might secure, offered by the State. That is one of the things I believe we ought to do and all gentlemen interested in live stock growing and breeding, should in their own counties, look to it that their representatives are talked with, and have impressed upon them the necessity of Ohio's taking a stand in the front rank. To do so we must have some money; it is impossible to do it otherwise.

Now I would in the Ohio exhibit have a veterinarian at the expense of the State of Ohio, so that every gentleman who took his stock there, could feel that he had a competent person to look after and care for it, and to see that it was properly fed and properly cared for, and without expense save to the State of Ohio. I believe that would be a very grand feature in our work. We might perhaps not require one veterinarian to stay the whole length of time. We could get a very competent one to stay for three months perhaps, and then another one for three months, without being at a large outlay, but it would require something, and I would have it arranged so that every stockman would feel that he had some one who could look after and take care of his stock. Even if he is home a day or so, that this veterinarian should have charge and see that proper care is given to all of the stock that were on the ground. I believe they have general managers for all these departments, but I would see that Ohio's exhibits were first cared for by Ohio men.

Now this is a great and important work for the stock breeders and stock growers of Ohio. It will bring back, if you gentlemen do what I

believe you can do—it will restore to you largely a trade perhaps with South America and with the Southern States and the Southwest and away beyond. We have as good blood in our stock in Ohio, I believe, as any where in the world, and all it requires is this stimulus to see to it that the stockmen go to work at once and bring out and develop this industry and report, if you please, to me as chairman of that committee, what you desire to have done, and what your wants are. I would be very glad at any time to hear from any of the gentlemen present and would like to have you join with me in seeing what we can do to develop more fully the resources of Ohio stock. I don't know, Mr. Chairman, that there is any thing further I would add at this time.

The Chair: Have you formulated such a resolution as you desire to have passed?

Mr. Wadsworth: I have not, sir; but it might be well to do so. My idea was, as I remarked, that it was for the gentlemen who are interested here to direct the Chairman of the Stock Committee, rather than for me to direct them. I would like to hear the views held by the various members present. I am not tenaciously attached to any particular method; I am not in a one-line rut in relation to this matter, but I am a "general purpose" man; want to gather up the best we can get, and I would like to hear from the other gentlemen present in regard to this matter.

Mr. Todd: Mr. President and Gentlemen: I never in my life felt quite as I feel just now; I never in my life before felt as though I wanted to say more than I knew I could say, which feeling I do have at this time. I never in my life felt the importance of a subject as I feel the importance of this; and I believe, were we to meet here on this occasion and keep silent, the very chairs we sit in would cry out in its favor. And now we want to enforce and clinch what we do for this—this—. You know what I mean [laughter]—I mean the show of stock, but I want another word there—and our exhibit of agricultural implements at the World's Fair. We want to clinch that. [Applause.]

Now, my friend over here has told us what is necessary to be done. He said we could look over the history of many of our best men, our noblest men from their origin and their birth and trace it to Ohio. I think the same may be said of our stock. We have two of the best breeds of hogs on earth to-day; we challenge the world with them both, and both of these breeds of hogs trace their origin to Ohio, and they are the only animals, with the exception, perhaps, of the trotting horse, that can strictly be said to be American. That is why I feel interested in the exhibition that we shall make at the World's Fair in the stock department, and as regards agricultural products.

Now, with relation to the machinery, as relative to the manufacturing people having the same reason to urge that there should be an appropriation for them the same as is asked by us, I think there is no contrast. Every body knows the great expense and the great risk that we run in showing animals there, on account of heat and on account of the liabilities to disease and on account of the constant supply of food which the animals we show will demand. These other industries have none of these expenses; they have no fears of disease, they have no expense for food, and, as my brother said, they are protected, too, by their patents which are on their machinery.

Now, I believe that Ohio can make a creditable showing there, as creditable as any State in the Union. I feel like this, as though the few dollars we might expend in this State through such an appropriation as we ought to have from our Legislature, will not represent just its money value in dollars and cents, but it should also be remembered that it represents the interest which a creditable exhibit will create in our State, and which will be beneficial not only to us, but in the far off future, and which will be handed down from one generation to another. Oh, with what pride our ancestry will look back over our record, if they see that we are at the front in that great World's Fair Exhibition. If there is any thing in that, my friends, that we want to induce our boys to stay upon the farm and thus supply the great want of this nation, that of having men to take front rank in the nation we want to make a good showing there. It will encourage our boys more than any thing else; encourage them to stay on the farm, and when we understand that the commerce of this great nation is being conducted by five hundred people, eighty per cent. of which are farmers' boys, we will realize the importance of making something else on the farm besides making money. We want to make men; men, that when they go to the front, will have backbone in them and will stand there irresistible to all the damnable sins and temptations that shall be brought upon them by our city men. That is what we want. (Applause.) We can bring about this in no other way except upon the farm. That has been the experience of all history, and it is repeating itself every day.

Now, as regards our showing there for fun, we would not be likely to do that to any great extent. I want to say that our State is away in the background. It has never done any thing; it has never offered any thing to encourage the showing of stock or of agricultural products at the World's Fair as yet.

We have not received a single dollar. I believe that our governor in his inaugural does recommend that the legislature take action on this subject. If it is so, that is so much in advance of any thing we have had

up to this time, and I am glad he has taken that position. I have felt that our political condition was such in this State that we would very likely be ignored. You understand how we are here where the political scales about balance, and just a little thing will make the scales tip this or that way. If it tips that way it means that the Republicans are in office, and if it tips this way it means a Democratic administration. Now that is the position we occupy to-day. The Republican party has gone in office for the purpose of saving thousands of dollars to this State by being economical, and the Democrats are watching with an eagle's eye to see if they do expend a little money here or there, so that they can get on to the stump the next political campaign we have and charge extravagance upon the Republicans, and in that way secure to themselves the offices of our State government. That is just where we stand, and that is the reason why we can not expect as much recognition as we ought to look for, perhaps, in order to place our exhibit at the front of the world's exhibits; but I hope that our legislators will have big hearts enough and souls enough to step out beyond the narrow bounds of partisan politics and be statesmen and not politicians, and render to us the aid we seek. [Applause.] What I want to say is this: We ought to have for the exhibition of stock at the World's Fair at least \$60,000. Oh, what a small sum that would be! What an insignificant sum, when we look upon what it may do for this State, not only at present but in the future! What a standing it may give this State, not only as a stock-breeding and stock growing state, but as an agricultural state; and what faith it may give the farmers in our business. I tell you it is an insignificant sum when you look at the results; still, it would have vast power toward encouraging the exhibition of stock and agricultural products at that fair.

I want to say that we are going to have the biggest fair that men ever looked upon. We are going to have an exhibition there that will be the crowning glory of America, send a thrill over the civilized world, and will open resources not only for our stock, but for our agricultural implements and our agricultural products which will be world-wide, and we may feel well proud of it and proud to sustain it.

And now I want to say, in conclusion, I hope if there is any legislator who dares sneak behind his duty, and for political reasons will refuse to make a donation for the exhibition of our stock, that every man who breeds a horse will take the stump at the next political campaign and set that horse to kicking him; every man who breeds a Jersey bull will take the stump and set that bull to goring him; that every man that breeds a Shropshire or a Merino sheep will take the stump and set that ram to butting him; and every man who has a cur dog, even, that he can not use for any other purpose, that he will set that dog to gnawing.

and chasing him; and that every man who has a game rooster will take the stump and set that rooster to pecking out his brains; and my friends if that is not sufficient, I hope that every man that breeds a jackass may bring that jackass out and kick his very "paunch" out. [Laughter and applause.]

The Chair: Any other gentleman present who desires to say any thing upon this subject?

Mr. Todd: I forgot one thing; every man who has a Berkshire boar will set that boar to eating at him until there won't be any thing left of him.

President Levering: Any gentleman present who has any thing to say on this subject, now is the time to do it. [Cries of "Bonham!" "Bonham!"]

Secretary Bonham then said: Mr. President and Gentlemen: I came in during the the time that Brother Tod was flying the eagle, and I hardly know what was the trend of the remarks that have been made on this subject. I put this subject upon the program in order to give Brother Todd and the gentleman from Wellington a chance. I think it is an important subject. I have felt the importance of this subject as a member of the Centennial Commission. When the subject was brought up: "What help can we give to the agricultural interests and the live stock interests?" I immediately saw that the friends of agriculture on that board were largely in the minority. Manufacturers stated that it was the understanding that no help would be given to exhibitors; let every exhibitor make his exhibit on his own responsibility and at his own expense. That will be the spirit that will prevail to an extent. Now I hope that the sentiment which will be developed here will help the commission to see that there is something to do besides simply inviting exhibits for the Centennial at Chicago. That will not be enough. I know it is vain for us to invite the agriculturist to produce the best wheat, the best vegetables, the best corn that he possibly can to help show what Ohio can do in agriculture alone. There is nothing in it to him except pure state pride, unless we offer a liberal premium. Other states in the west have offered a long line of premiums for every conceivable thing. Now I don't know that this is the wisest way to do, but I think it is necessary to offer something more than simply an appeal to state pride. You may produce the best wheat possible, but there is no profit to you in it; you are not going to increase the price of your crop of wheat; you will not get a nickel more from that wheat crop, or your apple crop, or your potato crop, or any other crops you produce because you have made an exhibit. Price is fixed by the laws of trade. Brother Todd has hinted that the manufacturer is protected on his manufactured article by a

patent from the general government, and his manufactured article is a specialty which he controls. He fixes the price of that article, and he makes his exhibit to bring it before the public, fixing his own price for the article having the protection of a patent from the general government. This protection is not extended to you in the production of horses, cattle, sheep, swine, or any of the agricultural products. Hence, if we are to make an exhibit at the World's Fair, we must have some assistance. Now what shall it be? Will you recommend that they offer a line of premiums, supplement the premiums offered by the World's Fair Commission, or will you recommend that the expenses in making the exhibit shall be paid? In Illinois, where one-fifth of their appropriation of \$200,000 goes to the live stock interest, giving them \$40,000 for the encouragement of the live stock industry, I believe that they have been all at sea to know how to appropriate the \$40,000. The World's Fair managers say that they will not make special awards for each State. When a line of animals is exhibited they will not allow a State to present its judge to go over the work and place premiums for that State on their line of animals. They say it entails endless confusion. That was the first plan that was supposed could be adopted by the Illinois people, but the managers of the World's Fair will not permit it.

Another scheme has been presented. When awards are made on live stock on a particular line, if the exhibit from Ohio has the second award, and some other State the first, that then will be the first premium for Ohio, and the exhibit next in rank from Ohio would have the second premium, and so on. They hope to solve this difficulty and come to a harmonious means of distributing this \$40,000. If we are going to get money to be used, we don't want to get into any wrangle as to how we are going to divide it. That is one of the difficulties which meets the commission right at the outset—what is the best way to encourage our people in making a creditable showing? We hope by bringing this out here that there will be some suggestion made which will help the commission to a solution of it—to do the wisest thing with the money at our command. You are aware, gentlemen, that the Legislature at its last session appropriated \$100,000 for the Ohio exhibit. It seems that that ought to be sufficient to bring out a creditable showing to the State of Ohio. We have already contracted or are contracting for Ohio's building or home at a cost of \$30,000 to \$35,000. The site that has been granted to Ohio is a choice one. There is not a site on the ground, unless it be the Illinois, more suitable than ours. They expect to expend \$100,000 in their building and have been given a prominent location for that reason. We have provided for expending \$35,000 out of the \$100,000. The next thing will be the necessary expenses of the commission. That of course will be provided for. Then

the question how to best utilize the remainder of that fund, and I hope as a result of this agricultural meeting and of the agricultural convention tomorrow, some expression may be made that will convince the commission that something special has to be done for the live stock and agricultural interests of Ohio if they are to be represented there as they should be. Now, right here I want to impress upon you as breeders and stock growers, the value to you of an opportunity to show your stock at Chicago. The time was when many of you were shippers of fine sheep west, by the car load, many of you were shippers of fine cattle west, many of you were shippers of fine swine, but there is very little of that done now. The trade is against you. We have supplied the seed until they are able to produce breeding stock in the west. Freights and transportation are against us; we are off to one side. Ohio has lost her grip on that western trade. Ohio has shown that she has been able to produce the very best stock in the nation and has supplied it, and I am told by importers that to-day Ohio men are the buyers only of the very best class of imported horses. They don't sell their scrub stock to Ohio breeders. They don't look for a market here. That is to our credit. What are we going to do with our improved stock if we can't find a market for it in the west? I say that this great exposition will open to America the markets of the world for improved stock. Ohio has shipped largely to Germany of swine, and there is a market for the enterprising swine breeder. There is a market in the Argentine Republic to-day for fine cattle, horses and sheep. There is a market springing up all over the world. Australia is buying from America, and we must be at the front, if we want part of the trade. It is trade that may not only benefit us this year or next year, but it is capable of endless development according to the enterprise of the men back of it in Ohio. We can ship to foreign lands as cheaply as any State in the Union and it is our business to see that this feature of Ohio's Industry is protected and encouraged at this World's Exposition. That is the great central idea of all fairs to develop a line of trade and it is for us breeders in Ohio to see that our wants are brought to the front. We are not organized to present our claims as many others are, and as a Convention, we ought to take advantage of this opportunity to make our needs felt; that we may have enough given us to encourage us, and to enable us to make a creditable exhibit. I don't think I ought to take more of your time.

Mr. Todd: I would like to ask Mr. Bonham one question. Is there a dollar of this \$100,000 to be appropriated for the benefit of the stock or the agricultural interest of Ohio? Can that commission use a dollar for that purpose?

Mr. Bonham: I don't see why they can not use a part of it in that way; there is nothing in the law to prohibit it. The law is framed to

encourage an exhibit and to get out the best exhibit of Ohio's industries, and it is simply a question for the judgment of the commission as to how this can be best done. The experience of all fairs and all other exhibitions is that the best exhibit is gotten out by offering liberal premiums and they don't expect to get it in any other way. There is nothing in the law to prevent it. All it wants is for the commission to see it in that light and let them act accordingly.

Mr. Foster: As most of the leading breeding associations of the State are now present, I would offer a resolution that each breeding association appoint one of their number as a committee to meet Mr. Bonham and Mr. Wadsworth to ascertain the best method to pursue in securing a proper exhibit of the live stock and agricultural industries at the World's Fair. They can advise about the matter and determine the amount which they think is necessary to be used. They can ascertain how much of this \$100,000.00 is available for use, and then the matter can be brought before the annual convention to-morrow.

Mr. Foster then moved that a committee consisting of one delegate from each of the live stock associations in session this week, meet with Mr. Bonham and Mr. Wadsworth to confer with them and prepare a suitable memorial to be presented to the State Agricultural Convention to-morrow.

Motion seconded.

A Member: So far as our association is concerned we have already arranged to meet with Mr. Bonham or any other member of the Board. We have appointed a committee of three. Their instructions have been given to me as secretary of the association to present to the secretary of the commission.

Mr. Black: I am in sympathy with the motion, and I think it is very desirable that some action should be taken as soon as possible. A majority of the associations have already held their meetings and some have disbanded. I would therefore amend Mr. Foster's motion by having the president and secretary of each association constitute a committee from that association to meet with the Secretary of the State Board of Agriculture and with Mr. Wadsworth.

Mr. Foster: I accept the amendment.

Mr. Bonham: I would like to make a suggestion at this point. I want to say that this is right in the line of formulating our ideas and getting them before the commission, but it occurs to me that we can do even better than has been suggested. This commission will meet in February. At that meeting they will consider the estimates made by the several committees on the appropriations for the several departments, and these estimates will be submitted to the commission and if possible

harmonized and properly adjusted, so that no department will have too much or too little. That is the object of their meeting in February. Before that work is done, I think it is important that our claims be presented and in shape, and if the committee of the president and secretary from each of the associations can get together and formulate their ideas and appoint one of their number to meet this commission at the February meeting, I think it would be still better.

Mr. Wadsworth: I have always found about as good a way to do any thing is to do it the best way, and about as good a way to get men stirred up is to get them to act when they are in line. These gentlemen are all in line to-day, it seems to me, and I would therefore recommend that they report to-day as far as they can, how much funds they will ask or need for each of their various departments, always remembering that they must keep within due bounds, not to ask too much, but sufficient so that we can make such a showing as we want. Of the amount which has already been appropriated, of \$100,000.00, I think it is determined by the commission, that already, in the different departments without taking into consideration any premiums for the stock men, practically all that will be consumed. It will be necessary in my judgment for the stockmen to make themselves felt before that commission. In that commission we have not got, as I understand, gentlemen, very many men who are what I may say personally interested in the stock exhibit. I have myself been a stock breeder from a boy up, I am very much interested in it, but I think as a rule—and I think Mr. Bonham will bear me out—that our Board is not represented by many stock men; while we have a great many men who are largely interested in mechanical industries. Therefore, I feel it is important that the stockmen should make themselves felt before that committee and I suggest that one of them—probably their president—should appear before that commission and demand an audience and make their wants known. At the same time I would prepare all this work now and get the ground work all prepared and then go before the commission and press our claims. I believe we may succeed with this Legislature. As Mr. Todd has well said, I don't believe there are but few of those members, although they are very economically inclined who will dare to ignore the farming interests. I don't believe that Ohio has elected a Legislature that will go back upon an interest so vital and so valuable to the State of Ohio as ours. If they are I am done with them and wish them all the good things which Mr. Todd wished them, and I would add, to relegate all the partisans in the State and to give us a good party in its place, but so far as our commission is concerned, I can say very truly we have no politics in it. There has nothing of it come up in our Board of a political

nature, and therefore we can all, Republicans, Democrats, Prohibitionists and Mugwumps join hand in hand and press this work we are interested in to a successful issue. I hope we will all do it.

The Chair then put to the House Mr Foster's motion as amended by Mr. Black, and the same was unanimously adopted.

The Secretary then announced to the Institute the hour and place of meeting of the various stock breeding associations which were to convene during the noon recess. After which a motion to adjourn until 2 o'clock P. M. prevailed, and the Institute recessed until that time.

CITY HALL, COLUMBUS, O., *January 13, 1892.*

AFTERNOON SESSION.

President Levering, calling the Institute to order, said:

Gentlemen, the time has arrived for resuming the exercises of the Institute. You will please come forward and take front seats; it is a little more sociable, at least.

The first exercise on the program is, "How to Breed Trotting and Pacing Horses to Make Money," by Dr. W. C. Fair, Cleveland, Ohio. Is Dr. Fair present?

Dr. W. C. Fair then came forward to the platform and read the following paper:

MR. PRESIDENT AND GENTLEMEN: To know how to breed trotting and pacing horses to make money, would at first sight appear very simple, and easily understood.

However, the correct history we get from many unsuccessful breeders of light harness horses, goes to show that considerable knowledge is required in order to be successful, and the reason why many have made beautiful failures out of the breeding business, can be charged to a variety of causes.

Many men are entirely theoretical, while others are practical, without the slightest theoretical knowledge, and in order to be successful you must be both, theoretical and practical.

Without a knowledge of the laws of heredity, you can not hope to be successful. You are well aware that like begets like, or the likeness of some remote ancestor.

Therefore you must not hope to change any well known and fixed laws of nature, because you have some pet theory of your own, whereby you have been trying to produce results that are impossible.

You are aware that the majority of chronic diseases are hereditary, and especially so if any inflammatory troubles exist at the time of copulation, or during pregnancy.

You are well aware of the fact, that unsoundness in produce changes their value very materially. Hence, the great necessity of both sire and dam being sound and free from any predisposing causes of diseases. Therefore, to be a successful breeder, you must have a knowledge of what constitutes a sound animal.

There are three parts of a horse that are prone to unsoundness, and in making a selection of either sire or dam, you should examine these parts very critically before purchasing.

The three parts I refer to, are the fore legs below the knee; the hocks and the eyes.

It is a fact that three-fourths, if not five-sixths of chronic unsoundness can be located in either of the three parts mentioned, and in order to develop early speed young animals require to have especially well developed hocks and limbs below the knees, in front.

It is equally as important to have good sight and well developed eyes, in order that animals can see a long distance. They drive more promptly and resolute; do not shy or hesitate to go ahead, and improve; either a stallion or mare are worth to a breeder one-third more with well developed eyes than if they did not have them.

But, how many times do we hear of both stallion and mare being used for breeding purposes, that are blind, and where their produce are sold, an apology is often times offered that they lost their sight by accident or pinkeye, while the truth, if told, would be that they lost their sight by reason of hereditary predisposition to disease.

Now then, is it to be wondered at, that such breeders should lose money?

An argument that is often used, is this: They point out a number of their stock, produce of their blind stallion, and remark that they have all got good eyes.

Would it not be wise to wait until the produce get age, and become fully matured, and then make the count?

If you will, you will find that many animals lose their sight after maturity.

You have noticed in the human family, that whole families are obliged to commence wearing spectacles almost from infancy, and continue to do so all through life. All going to show the importance of using animals with sound eyes for breeding purposes.

Another fact that is often lost sight of in the breeding of trotting and pacing horses is size.

There are breeders who have their eyes fixed on nothing else but speed, and speed alone.

While on the other hand, if they fail to produce that which can go a mile at a high rate of speed, their animals are worth but little for any other purpose.

Now then in making your selections, try and find animals suitable for the greatest number of purposes. You can find animals that are suitable for every purpose, that are bred in the most fashionable blood lines to produce speed. This being so, why do so many breeders persist in using small, ill-shaped stallions, that may have obtained a fast tin cup record? Day, track, and every thing favorable to showing a fast mile.

Now then in my judgment, if the stallion is not well bred in blood lines to produce speed, you had better castrate him at once. If he has a disposition that you do not want his produce to have; if his gait be imperfect, and he does not suit you, or in a few words, if he is not, every way that you wish for his produce to be, do not use him for stud purposes, or the chances are against your making money.

Now that I have shown you why many lose money in the breeding of trotting and pacing horses, I will endeavor to tell you how you may make money in the same business, and my advice will be principally directed to farmers and breeders of moderate means. Not to the millionaires in the business.

In starting out to breed trotters and pacers, you should first become familiar and conversant with the different families, in order to know the value of pedigree.

After studying that, you should try and obtain a knowledge of what constitutes soundness and quality. You should also become familiar with action and gait, all of which out a very prominent figure in values.

You must also remember that color adds materially to the value of horses, while size, style and high knee action will frequently enhance their value one hundred per cent., or even more.

You must remember that it will seldom pay to try and develop the speed of an illy, gafted colt, be he either trotter or pacer.

Another one of the very important things for a breeder to learn, is how to properly break a colt and teach him to drive kind and pleasant. It is safe to say that one-half of the trotting and pacing foals reared, are either spoiled by getting their mouths tender, or of learning them the art of kicking, which, with many families, is easily accomplished. It is also frequently the case that a colt's gait is so disturbed and broken that the injury done can not be remedied unless he falls into the hands of an expert trainer.

My advice is, if you have a good colt, give him to a competent colt breaker to break. If he shows a good gait and disposition, place him in the hands of a competent trainer, and you will find that it will pay you.

Understand that a colt must come honestly by his speed, just as an honest boy comes by his honesty; being of honest parents, he inherits it, and has a right to be honest.

Do not pay training bills on horses that can not go a mile at their highest rate of speed, or nearly so. They will only get you into trouble racing them, and win you but little, if any money. In order to make money as a breeder, you must thoroughly understand the feeding, proper development and growth of young stock. That can only be learned by a knowledge of the digestive system of animals, and the chemistry of the food supplied them.

Animals depend on food and drink. Food furnishes material with which to construct the body, and stock raisers can increase or diminish the size of their domestic animals within a certain limit by increasing or diminishing the amount of food supplied them, and the size within constitutional limits depends upon the amount of food the animal can digest. Abundance of food, coupled with plenty of fresh air, exercise and sleep, insure a far greater size and development than when the food is scanty.

Another very important function of food is to maintain animal heat. So important a function is this, that it is safe to say that there are three-fourths, if not four-fifths, of the food consumed, required to maintain the animal heat of the body.

If you fail to appreciate what I say, go without a meal or two, and then expose yourself to the cold. Then you will soon learn the importance of proper food and the necessity of protection from the cold to insure the growth of young stock. Exposure to cold weather and storms; stabling young stock for the winter around straw stacks, have been the cause of thousands of failures in the breeding business.

Another reason why many do not succeed better, they have altogether too many animals. The result is that none of them receive the proper amount of food requisite for their early growth and development. Others fail because they fail to sell young stock at what it is worth. In order to succeed, you must sell whenever you can make a fair profit. That can often be done by selling them when young. You will find a ready sale for all the good ones you produce, and if you stop to think, you will see that there is no reason for producing any other kind.

How many times have you known worthless cripples, fearfully unsound, put to breeding, because they are not worth a cent for any other purpose, and they certainly are not for breeding purposes. However, they are bought cheap, and nine times out of ten they prove to be a bad investment.

Each year you must produce better animals. Customers are beginning to know more of horses. They are becoming better judges of quality and soundness.

Breed animals that do not need boots or weights. Have an eye to mating animals of proper gait and disposition. You can do it if you try. Do not listen to the advice of an unsuccessful breeder. Their advice will reck you if you follow it. Keep your stock looking well the year round. Do not starve and neglect them. Animals can be grown and matured one year earlier if properly fed and well cared for.

If you are a breeder, use your very best mare for breeding purpose. Do not hesitate to breed your mare to a first class stallion, even if your neighbor does own him. Many a man has failed in the breeding business by patronising his own stallion. No one should know the weak points of a sire, as well as the owner, and if he were honest with himself,

he would know them. Do not breed a mare that can not trot or pace fast to a slow horse and expect a record breaker.

Do not try to own too many. You had better sell three second class mares and buy one first class one.

Take care of her and her produce. You will make more money out of one good one than out of half a dozen poor ones.

Break and track your colts young. Do not work them enough to make them unsound, because the unsoundness reduces their value more than the speed developed enhances it.

If you are breeding with an eye to speed, then purchase mares that can trot or pace fast themselves, or are producers of speed. Then mate the mare with a sire that has shown his ability to go fast and sire speed. Both sire and dam should not have less than three crosses of standard and producing blood. That being the case, the foals being properly fed and well cared for, you need have no hesitation in expecting good results.

One of the greatest errors that breeders commit is, they do not feed young stock enough to keep them strong and growing.

All sensational colts that I have known have been well fed and their growth rather forced by high feeding and strong exercise.

Young animals that go fast must have the strength and power to carry their gait for a mile or further.

That can only be accomplished in one way, by feeding and exercise.

By maturing your stock early, you make quicker returns. You add to your chances of producing sensational performers and stake winners.

Young stock are seldom furnished with a proper supply of clean water. Many of them are kept in illy ventilated stables. They are not properly groomed. They are allowed to become lousy, and a majority of them are wormy, all of which if not properly attended to causes loss.

Breeders must also remember the necessity of keeping their stock advertised. In order to sell fast stock, you must let purchasers know what you have for sale. By keeping your name before the public, you will find an outlet for the produce of your farm. You can not make money breeding trotters and pacers, if you can not sell them.

However, the market for large and handsome carriage horses and fast road horses was never better than it is to-day. On the other hand the country is fast filling up with a host of scrub trotters and pacers, that it would have been wisdom on the part of their breeders to have destroyed them when foaled, for the expense of rearing a scrub is almost as much as if he were a good one.

The business of breeding trotting and pacing horses is a profitable one if properly followed, but to make it so you must open your eyes and imitate the successful breeder and profit by their experience.

President Levering: The program announces that the discussion is to be opened by Prof. T. Armstrong, Mt. Union, Stark county, Ohio. Is Prof. Armstrong present? [No response.]

The Chair: As Prof. Armstrong is not present, any gentleman present having any thing to say in the way of discussion on the paper, will now have an opportunity. [No response.]

The Chair: If all consent, it is all right. The next exercise on the program is a paper, "Where the Draft Horse Excels and Pays," by Newton Rector, Kinderbrook, Pickaway county, Ohio.

Mr. Newton Rector, of Kinderbrook, Ohio, then read to the Institute the following paper:

WHERE THE DRAFT HORSE EXCELS AND PAYS.

The first importation of draft horses came from France about twenty-five years ago. Very soon other importations came from Scotland and England. From that small beginning we have to-day a grand breed of horses that for agricultural purposes, for heavy hauling in our large cities, and indeed, for all heavy draft work have no peer. No other breed has even attempted to supplant the draft horse, because they all lack weight and power; two important points to be considered. The census of 1890 gives the whole number of horses in the United States at about 15,000,000, and estimates that one half of those in use are required for rapid draft purposes. During the year 1890 the Chicago horse market received about 95,000 horses, and in 1891 near 100,000. At other cities the horse markets were abundantly supplied. At all the large cities the supply of heavy horses found ready sale at good prices. By referring to the Chicago horse market for last December you will see that draft teams weighing 3,200 and 3,300 pounds brought \$400. Spans weighing 3,500 and 3,600 pounds would sell readily at \$450 and \$500. On the same market *chunks* sold for \$60, \$80, and \$100.

I heard a gentleman who lives in central Illinois, whom I met at the fat stock show last November, say that he sold 17 head of three and four-year old Percheron geldings for \$225 each. But they were high grades and weighed from 1,600 to 1,800 pounds. In conversation with other gentlemen at the same time the universal opinion was that the supply of good heavy draft horses was not equal to the demand. That we have a surplus of inferior horses of light weight that are neither fit for the road nor for draft purposes is admitted, and of such we always shall have a large supply, so long as we have the careless, aimless, shiftless breeders among us.

In our large cities the immense traffic in all its branches of commerce where thousands of tons of agricultural and manufactured articles are annually transferred from one depot to another, and from one point to another, heavy draft teams are required to draw the enormous loads of four and five tons. Light horses can not economically perform this labor, and the very best heavy draft teams are short-lived when worked constantly at heavy hauling on hard and stony pavements, where every muscle is strained to its utmost tension. Large numbers of the very best and heaviest draft horses are annually required for use in the lumber regions. The constantly improving and ever-progressing demands of agriculture, where economy of labor is always an important factor, require heavy, quick walking draft teams to draw gang plows turning two, three and four furrows six and eight inches in depth; mowing machines cutting a six and seven foot swath; self binders with six and eight foot cutter bars; disc harrows cutting and pulverising the soil to a depth of three and four inches; heavy iron rollers for compressing the soil, and eight and ten-hoed drills with fertilizer attachment; all these and many more we could name must be drawn by teams of weight and power. The great corn crop of 1891 is estimated at 2,000 million bushels, loaded into railroad cars forty feet long six hundred bushels to the car, this enormous crop will more than engirdle the earth. Our crop of wheat estimated at 600,000,000 bushels, loaded into wagons containing fifty bushels each, allowing thirty feet for each wagon and team, would encircle the globe two and one-half times. Add to this the great oat crop and other agricultural products of this the most prosperous year in the history of our country, and remember that it was largely produced and must nearly all be hauled to feed, lot and market by horse power and that a large per cent. of this labor can be performed more economically by heavy draft teams than by light teams, and you can form some idea of the great and ever-increasing demand for teams of weight and power.

Draft horses can be raised and prepared for the market with less outlay of labor and capital than any other breed. The services of the very best stallions will cost fre-

\$20 to \$25. The colt can be left in the stable and halter broken while the dam can do light farm work. They can be turned loose in a shed or stable the first and second winters with very little risk of blemishes. With oats and bran twice a day and plenty of good fodder and hay they will be in splendid condition for grass; at two years old they will be large enough for farm work. The mares can be bred and ever after they will pay their way. When four and five years old they are ready for market and will fetch from \$150 to \$250 according to weight and quality. They require no costly outfit of sulkeys, harness, blankets, shire-boots, quarter-boots, knee-boots, toe-weights, scalpors, etc.; do not have to make a tin cup record on a kite-shaped track; pools are never sold and book makers unknown in draft horse breeding. Farmers who raise draft horses as a rule raise steady boys with plenty of muscle and brains. A wealthy and influential Pickaway county farmer once owned a very fast and promising race horse. He was the proud father of a manly boy who began to show signs of going very fast also. The farmer wisely decided that a change must be made and he traded the thoroughbred for a splendid draft stallion. From that day to this he has never regretted the exchange. The moral is plain.

The craze for breeding coach horses that has prevailed for the last few years has stimulated the importation of hundreds of Cleveland bays, Yorkshire bays French coach, German coach and English hackneys—a large majority have been of inferior quality and breeding. They have been introduced in many parts of the country and crossed indiscriminately on all classes of mares.

Many farmers who own good grade draft mares have very unwisely bred to these so-called coach stallions. The result is a great disappointment as the produce are inferior in quality and size, with no speed at the trot, unfit for the road and too light for draft. Farmers and breeders of heavy horses who have wisely continued to patronize only the very best imported draft sires will profit by the mistake of their near sighted-neighbors.

From 1875 to 1888 large numbers of draft stallions were imported and sold that were under size, very inferior in quality, and whose pedigree consisted of but one word—"Imported"—at the same time many of the very best and purest bred stallions, backed by generations of careful breeding, came from England, Scotland, France and Belgium. During the last few years importers have as a rule brought over the very best horses they could buy, as there was no sale for inferior stock.

Among the different breeds we have to select from are the Suffolk, Punch, Belgian, French Draft, Clydesdale, English Shire and Percheron.

In numbers and popularity they probably rank in the order named. Mares of the different breeds and generally of good quality have also been imported. Indeed some of the finest individuals that money could buy have been brought to America. We have several large steeds of imported and pure bred draft horses of great excellence in the United States. Among them the renowned Clydesdale steed of Robert Halloway, with the great Cedric at its head. English shire breeders are represented by Burgess Bros., who have a large steed, and Geo. E. Brown, with that invincible prize winner "Holland Major." But undoubtedly the greatest collection of noted and prize-winning draft horses to be found on either continent is collected at Oaklawn, the home of the Percherons where the great Brilliant surrounded by his sons and daughters of the third and fourth generation has no equal as a prepotent sire.

If ever there was a propitious time to embark in the breeding of high class draft horses, it is now. The very best pure bred mares can be purchased for \$300 to \$600. Stallions will cost from \$1,000 to \$2,000, and for choice animals \$3,000 and \$4,000. A draft stallion should weigh from 1,800 lbs. to 2,000 lbs., and mares from 1,600 lbs. to 1,900 lbs., provided always that quality must not be sacrificed for size. If we expect to raise draft horses to excel and pay, raise draft horses exclusively and let other breeds severally alone. All successful breeders of improved stock have confined themselves to one breed. Abram Rennick made a name and fortune by breeding "Rose of Sharon." Col. Harrie of Linwood, gives his whole attention to Cruickshank blood. Senator Stanford has

made a national reputation by judiciously crossing the blood of Electioneer, while Mark Dunham is known the world over as the most successful breeder of Percherons. We live in the greatest country on earth. Eminent Americans who have traveled in foreign lands and have carefully studied the resources of different countries and nations declare that the United States is the garden spot of the world. Our corn crop for the year 1891 was the largest, with one exception, ever produced. The oat crop of 736,000,000 bushels is the largest ever grown with one exception. The wheat crop is the largest ever produced in any country, and the average yield per acre is the highest ever grown in the United States. The aggregate of all cereals is the largest ever produced, and the total value is estimated at \$1,582,224,198.

Marvelous as these facts appear, the truth remains that we have but begun to develop the wonderful resources of this magnificent country. Remember, my friends, that the noble draft horse is an indispensable factor in the production and marketing of this unprecedented cereal crop.

It is conceded by men of intelligence and wisdom that we are entering upon an era of unparalleled prosperity. Very soon the arid plains of the west, by a vast system of irrigation, will be reclaimed and millions of acres added to our agricultural domain. Improved systems of agriculture will greatly increase the yield per acre of all kinds of crops. By a wise and systematic inspection of our meat product, both on foot and slaughtered, the markets of the world will be open to us. The increase of our population at the rate of a million a year, with reciprocity and low tariffs, will give us a market both at home and abroad that will consume the vast manufactured and agricultural products of the United States. In all this increasing prosperity we shall have a constant demand and advancing prices for the handsome, intelligent, fast walking, heavy boned and powerful draft horse.

During the late civil war a rich southern planter found his home suddenly threatened with destruction by Union soldiers. He hastily buried a pot of gold in a field near by and with his family fled from the approaching enemy. He was killed in the southern army. When the war was over and the starry flag floating over every state in our Union proclaimed a united and free people, his children returned to the old plantation. His sons sought long and diligently for the hidden treasure and each year turned up the soil in hopes of finding it. But the shallow plowing and constant cropping only made land and family leaner and poorer. At last in sheer despair they bought a shining new steel plow and began to turn the soil deep and thorough, to increase its fertility. When lo! they turned up the "pot of gold."

Breeders of draft horses, let us harness the magnificent kings of agriculture to the shining steel gang-plows, and turning the soil wide and deep increase its fertility, while great crops of wheat and corn shall annually yield us "pots of gold."

President Levering; Mr. Kling is marked on the program to open the discussion upon this paper, but Mr. Kling is not here. I understand he is unavoidably detained at home by sickness in his family. If there is any gentleman who has any thing to say upon this subject, it is now before the institute for discussion.

A Member: I believe the gentleman advocated working his draft horses at two years old. I would like to ask him if he considers it proper to work a draft horse at that age.

Mr. Rector: Mr. Chairman, I can answer that question by saying that a draft horse at two years of age properly developed, will weigh 15, 16, or 1700 pounds, and they can do light work at least without any trouble. The breeders of draft-horses breed them at two years of age.

A Member: Do you consider it safe to advise that they be worked at that age?

Mr. Rector: Yes, sir, if handled carefully. Of course, I would not allow every body to work them promiscuously, but I say if used carefully, it is well enough to begin to work them at that time. They will pay their way, but of course, I should work them moderately.

Mr. Phelps: I would like to ask the gentleman if he would consider the draft horse a good general purpose horse for farm work.

Mr. Rector: No, sir, I don't say I consider them a good horse for all kinds of work, but for farm work where we want to do more work than we have been in the habit of doing before, they are an economical horse to use. It is well enough to have light horses for some purposes, but the demand now is for the large draft animal. For breeding purposes the extensive breeders of the best horses scarcely ever use a stallion whose weight is less than 1,900 or 2,000 pounds. The main object in breeding draft-horses is to supply the market and the demand at present is for a large horse.

Mr. Phelps: I beg leave to differ with the gentleman who has just spoken. I think the draft horse is a special purpose horse. The draft horse may be a source of profit to some farmers to raise them and sell, but I have failed to find a single man that will say, in my neighborhood at least, that the draft horse has been a profitable horse for him to keep to work on the farm. They fail us just when we most need them. Our first experience was some fifteen years ago. We had a good team of road horses, well bred. We purchased a new reaper that year and had a good deal of grain of our own to cut, and about 100 acres of wheat for our neighbor. Not very many had reapers at that time, and so we aimed to cut the crops of more than our own. During harvest time, we found that these horses were not equal to the emergency. After the second day's cutting, we noticed they began to sweat and to give out. The result was that we had to take a lighter team to finish our cutting. We tried those horses at other times. They gave out every time. I noticed that whenever the ground became soft these horses gave out. I live near Westerville, in this county, and one day I inquired of a man who lives over near Urbana his experience in regard to the use of draft horses upon the farm, and found that it coincided with mine. We found that they were a failure as a farm horse. It seems that they can't get their feet out of the mud in time, and it seems to worry and worst them. They can work well enough when the ground is solid, but I will take the well bred trotter, and when he is young, I will do more work on the farm with a team of that kind, than you can possibly do with draft horses, and I have tried and tested it.

A Member: Mr. President, I have had some experience with heavy horses, although I don't make horses a great specialty. I have a team now where one of the horses weighs 1,680 and the other one 1,700 pounds and something. When I had two teams on the road, say, for instance, I was going to town with a load of grain, seventy-five bushels, with good roads, I could go to town a great deal quicker with a lighter team than I could with a heavier one, and I lost a good deal of time coming home; and where I lost my time on the farm was just where he speaks of in soft weather. But this should be remembered in that connection, that we ought to keep off our ground in soft weather. While he is working in the soft ground and tiring out his draft horses, he had better keep off his ground. We don't generally have such harvests as make it necessary to go upon our fields when the horses will sink in. The objection I have to the ordinary road horse for farm purposes is because they are too light when it comes to heavy work. I am in favor of the general purpose horse for the farmer; he is best for me. I have tried the draft horse, I have tried the roadster, and I have tried the other horses, but give me the general purpose horse, and I can plow more with him, I can harrow more with him, or I can do more of any kind of work with him than any other kind of an animal. I think for the general use of a farmer, if we can get a good coach horse, they are the best, in my opinion.

Mr. Rector: I want to give a little of my experience upon this subject. I have a gelding that weighs from 1,500 to 1,600 pounds; when he is in flesh he weighs 1,600 and never falls below 1,500 pounds. There has not been a team on my farm except that team in the course of a year. They never give out in the harvest field, and you can't purchase a general purpose team which could do the work these horses do. A neighbor of mine who has considerable bottom land, works about twelve teams, and yet he has three or four teams which average from 1,400 to 1,600 pounds. They are well bred horses and they never give out.

Mr. Chaney: The draft horse, the coach horse and the roadster are all good in their places. The draft horse is good for slow work. One of the troubles of the draft horse is using them for transportation. You get the right kind of a trotting horse, well and thoroughly bred, and he will never give out.

Mr. Miller: Mr. President, some parts of my friend's paper I admire very much. The draft horse that he refers to as bringing large prices these later days are the large horses of quality, and the reason of that is that purchasers are not more particular. They need them for heavy work and they select the very best kind in fact the class of horses has got to be of high quality. The scrubs, nobody wants. It is the good ones that bring the price. For draft purposes these heavy, big horses, with good bone,

good feet, hardy constitution, will bring a long price, but for farm purposes, for the tilling of the soil, for hauling away the grain, I think they are not the horse we want. We want a lighter horse, we want a close made horse, a horse 1,150 or 1,200 pounds properly made, properly bred, with the right kind of training, will equal the biggest horse in America, and I don't care what you put him at. Take a Mambrino horse, for instance, that is well bred of the proper make; he will raise more corn, he will do more work of any kind when put on a farm than the biggest horse that trods on the American soil. I have my doubts a little as to the wisdom of some of the assertions that my friends make about the coach horse—the importation of coach horses. Many men make a mistake in breeding their driving and coach horses. A draft man will breed any kind of a mare, a thoroughbred or a Texan pony, or any class they can get simply for the service, when the progeny will not pay a dollar over the expense of raising it. If you want a coach horse, the American trotter is the place to get them. If you want a good road animal, you can get them here. I think we can raise a better coach horse than you can get any place across the water. I know a five-year old gelding in this town that changed hands a few days ago at \$1,200; could trot in 25, and I will guarantee that there is not a better coach horse in Franklin county. The horse I refer to is the one Mr. Westwater sold, and the horse that took the four-year old record last year. If you want a farm horse, one to plow, one to market, one to haul your produce, select some good breed, a good horse that will weigh in the neighborhood of 1,200 pounds, with good feet, well proportioned with plenty of legs and bone. That is what you want, and that animal is worth more to the farmer than the draft horse. Then, if you find it necessary to go a little faster, you can do so. The draft horse is too heavy for our gravel roads—their feet won't stand it.

A Member: In referring to the coach horse, I mean the coach style horse of good action. He speaks of a horse weighing 1,200 or 1,300 pounds. That is what I call the profitable farm horse, but they are so few that you can scarcely get them. I have not been able to find them of that size that the farmer can buy, that he can afford to buy, but that I think is the profitable horse for the farmer. Of course if it comes down to heavy hauling, I believe that the heavier horses should be employed, but ordinarily farmers don't do much of that. That is the horse for me and I think it is the horse for the farmer.

Mr. Foster: My friend spoke of the Mambrino family. I heartily indorse all he says in regard to this horse. I sold a horse of this kind to Mr. Miller, of the Panhandle Railroad Co., that trotted a mile in 2.40 for \$300. That horse worked on my farm in doing general farm work. There is one point that has not been touched in connection with

the draft horse. You can break down a draft horse in a binder or a mowing machine, hitched by the side of a well bred horse of the Mambrino family; but I got up to offer this resolution, and not to talk "horse." There are parties here in a better position than I am to address you upon this subject. I ask leave to offer this resolution:

WHEREAS, The Ohio Association of Stockmen believe that Secretary L. N. Bonham, by reason of his extended acquaintance with the swine breeding industry and his long experience in fair management, is especially fitted for the duties of Superintendent of the Swine department at the Columbian Exposition; therefore

Resolved, That the attention of the appointive powers is requested to Secretary Bonham's especial qualifications for this work.

Resolved, That this Association requests the State Board of Agriculture and the Agricultural Convention to join it commending Secretary Bonham's ability for this work.

The resolution above offered, was then seconded, and being put to the house, carried unanimously.

Assistant Secretary Fleming then called the attention of the Institute to the fact that delegates could not avail themselves of the reduced rates offered by the railroad companies until at least one hundred certificates had been presented to the Secretary. As that number had not yet been presented, he urged all members who had certificates to present them at the earliest possible moment.

Mr. Todd then announced a meeting of the Shropshire Association to be held on Friday at 2 o'clock P. M. of the week of the next State Fair.

President Levering: The next paper upon the program is entitled "Grain Feeding of Young Things vs. Starving as a Means of Toughening," by J. H. Pringle, Cardington, Ohio. Mr. Pringle has sent word that he is unable to be here, and he has not sent a paper. The program announces that the discussion upon the subject is to be opened by Mr. O. P. Chaney, of Canal Winchester. As there seems to be but one side to that question, perhaps Mr. Chaney can present that side of it without Mr. Pringle presenting his paper. Mr. Chaney is here, and we would now be glad to hear from him.

Mr. Chaney then came forward and said: I am not prepared to discuss this question. Not knowing what side Mr. Pringle would have taken, it is a very difficult matter to discuss his paper.

The Chair: I said in the absence of Mr. Pringle we would be glad to have your views upon the subject.

Mr. Chaney: Very well. That question might have been discussed forty or fifty years ago when the transportation of our mails and of passengers in this country was by coach. At that early day horses that were worn out were turned out in the winter to undergo a process which was called "freezing out." I presume this freezing out and starving pro-

cess might have had its adherents in those days, but to-day it is not practiced by any breeder in the country. It is not practiced by any intelligent and successful farmer of this country. To toughen a colt by starving it, or to toughen any kind of stock by starving is now a process unrecognized and unheard of. The only results from starving an animal will be to develop its weaknesses, such as spavin, ringbone and other diseases which it is liable to have. My opinion is that a colt at weaning time should be fed all the grain it will eat up well; in fact successful breeders now commence feeding them when they are two and three months old; and one of the most successful breeders—one probably who has done more for the light harness horse than any other one man in this country—Dr. Herr, of Kentucky, follows this method. I was there when he was weaning some colts and found that he was in the habit of feeding them a bushel or two bushels of oats to eat just as they wanted it. His idea was that the proper way to raise colts is the same that the mother would raise the child after it had been weaned. He claimed that they required something between meals, and that the proper food with an abundance of it, with plenty of exercise, plenty of fresh air and water and regularity in feeding is the proper way to raise colts. You can over-feed a colt by feeding it in the stable when it is in want of exercise, but great care and judgment must be used in this as in other things. When they are doing nothing, when the weather is too bad to have them out, the feed should be taken off to a certain extent and lessened. Dr. Fair, in his paper, has probably given you the correct idea about the mode of handling and feeding colts, but the day for the starvation process for any kind of an animal has gone by. My idea and my experience has borne me out in this statement, that the colt being weaned requires more food than a horse two or three years old. It requires more for the colt to keep up the growth and the animal heat than it does in the grown horse, and another important thing is to feed the very best; not feed the young animal any and every thing, but feed them the purest and best, the best hay and the purest water. That is all I have to say, gentlemen.

The Chair: Is there any thing further upon this subject? Any questions to be asked in regard to feeding, this important branch of horse breeding? If there is no exchange of opinion upon this subject, we will now leave it. The next paper upon the program is "Coach Horses," by James R. McLaughlin, Columbus, Ohio. Is Mr. McLaughlin present?

Mr. J. B. McLaughlin then came forward to the platform and stated that his brother, James R. McLaughlin, who was announced to read a paper upon this subject, had been called from the city, and therefore the duty of preparing and reading the paper had devolved upon him. He

said: I have had a very short time in which to prepare this paper, and therefore will ask your indulgence in the matter.

Mr. J. B. McLaughlin then read to the Institute the following paper:

COACH HORSES.

When I first went to Europe in the spring of 1887, I was very much impressed with the horses that I saw there. The horses of Europe are strictly adapted to special work. For hauling heavy loads draft horses are used exclusively. Cob ponies are used for light driving. The thoroughbreds are their race horses, and very closely akin to the thoroughbreds are the coach horses, except that they are larger and more useful.

These coach horses were most conspicuous to me, for the reason that we are almost destitute of those lofty, active, fast and handsome horses that we can drive and see driven in the parks and boulevards of Paris. Without doubt there was a time when we had no draft horses in America, that we were more impressed with the monstrous draft horses of Liverpool or Havre, but those times are past. For twenty years the farmers of this country have made every effort (at the expense of an enormous amount of money), to raise draft horses. On the other hand in America, sporting men and the wealthy class (not farmers, as a rule) have made every effort to produce fast trotters, pre-eminently American horses.

There has never been a very great effort to raise coach horses in America. I sometimes wonder why the first importers brought draft horses rather than coach. Without a doubt, of the two breeds, the coach horse will best please the average American.

Our experience is in buying and selling, so what we have to say is more from observation while buying in Europe or selling in America, than from practical experience either there or here. I have been in Yorkshire, England, and in Normandy, France, where I have had an opportunity to see the most extensive breeders and dealers in coach horses in the world. As evidenced by the fact that we handle only French horses, when we have a chance to buy every breed, the French horses are our choice.

The breeding of all classes of domestic animals in every country, except horses in France, is conducted by individual enterprise and is the outgrowth of individual ideas. Therefore the fixity of type is greatly affected, or destroyed altogether, by the variety of opinions held by the great number of people of different tastes engaged in breeding; hence the lack of uniformity so highly esteemed and so necessary in every successful breeding animal. The French coach horse has been developed under the exclusive guidance of the Director-General of the National Studs of France, and as these officials are educated in the same school from generation to generation, are taught to value the same form, seek for the same qualities, and pursue the same system, we can understand how it has been possible to attain such perfection.

In the French coach horse district, government stud stables are distributed over the country very much as school-houses are in America. In these stables are stallions owned by the government for public service. These stallions are selected by the Inspector-General, whose power is extraordinary, controlling, as he does, the selection of all the government horses and thousands of others annually inspected, which must obtain his approval before receiving their permits and subsidies. All breeders are confined exclusively to the use of animals inspected and licensed by this department. This places the stallions entirely under government control.

This persistent selection of the most perfect individual stallions for generations, under the direction of a single mind, has developed a race of such size, perfect symmetry and wonderful endurance, that they are able to trot three and four-year olds in the three to seven-mile races common to France. Although they do not attain as high a rate of speed as American trotters, yet, when we consider the size of the animals, many of them weighing from 1,300 to 1,400 pounds in trotting condition, their cumber-

some vehicles or heavy-weight riders, and inferior tracks, we can not but recognise that they possess qualities unequaled by any other breed.

I have had much experience, too, in showing coach stallions in this country, and here is a clipping from the Breeders' Gazette which speaks the universal verdict of this country :

"I have had experience with all breeds and can see from a farmer's standpoint ; I have no axe to grind, as I do not import and have no breed to boom ; therefore I can see all sides of the question. But looking the field over carefully, I am satisfied that the horse that will come nearest to a general or all purpose horse is the one to raise. I might here describe what I consider a horse of this kind, viz.: One which, when developed, will stand 16 to 16½ hands high, with handsome and commanding appearance and weigh from 1,200 to 1,500 pounds, high knee and hock action, legs and feet well under him, denoting readiness for action at all times ; long neck, short back, well coupled, well-sprung ribs, good chest, deep oblique shoulders, well-set long hips, well-developed stifles, clean legs, plenty of bone, and *no feather* to catch wind and water.

"We need not 'be lost in admiration of the beauty and grace of the coacher,' for he does not end with this alone, but is the embodiment of prepotent force, unmatched in the world outside the Arabian or Barb horse. There are three families of coach horses: French coach, German coach, and Hackney. The last named are nice little horses, well bred, but too small. The German coachers as a rule are coarse and too long of leg and back. Of all the breeds, I believe, after close examination at the American Horse Show at Chicago, and the leading establishments throughout the country, there is none so near perfect or so well bred as the invincible French coach, a horse which can transmit to his progeny his own good qualities to a certainty. This is no longer a question. They are horses that will match easily and are large enough to do any kind of work, from the family carriage to the heavy truck. They are just the horse for the wagon, plow, or drag ; unhook him, put him to your 'surry' and he will take four grown persons at the rate of eight or ten miles an hour with ease and grace. Put the saddle on him and he is at home there—the finest of cavalry horses. This is what I call an all-purpose horse."

During the reading of his paper in relation to the governmental control of horses in France, Mr. McLaughlin said :

In France nearly all the stallions are owned by the government. If an individual wants to stand a horse, he must first pass the governmental inspection, and then he is subsidized ; that is, paid so much a year for making a stand in competition with the government stallions. He receives a permit, and along with the permit they allow a subsidy of perhaps 2,000 francs a year, provided he makes a public stand. They have to do that in order to compete with the government's stallions, who stand for a nominal fee.

At the conclusion of the reading of his paper, Mr. McLaughlin said :

I believe that the French coach horse, crossed with a good roadster, can be utilized to as much advantage by the farmer of to-day as any other horse that can be raised at the present time.

DISCUSSION.

President Levering : I would like to ask the gentleman what class of mares he would expect the best results from, in breeding with the French coach horse ?

Mr. McLaughlin: I would expect the best results from a cross with a good roadster. I would say, select your mares; pick out good, large-boned mares, and breed to that kind of horse only. The coach horse of France is bred much like the trotting horse in America, except in France they are bred with more precision, and more uniformity as to build, size and quality. That is what they have been aiming at all the time. In breeding coach horses, like breeding every other kind of stock, you must select the very best for breeding purposes, and the result will be satisfactory. I would advise the farmer to breed the French coach horse in this country with a good big road mare.

Mr. McKee: Mr. Chairman, I think if we breed these heavy draft mares to these coach horses, we will get a horse that has plenty of style and a great deal of action, but would have the disposition of the trotter; we get a horse that would fret at slow work. We have bred a number of times and have very fine specimens, look very fine, have the spirit of a thoroughbred, but will not walk in a wagon with a heavy load.

Mr. Foster: This matter of coach horses is a subject worthy of a good deal of attention. I claim to have read a good deal upon this subject, as well as having friends who have spent considerable time in Europe studying this question. The French coach horse is a horse of very recent breeding. And the question arises, how prepotent is he? Like begets like. Is there any one present who knows of a three or four-year old French coach colt sired by a French coach horse, who knows what he is? We know in the case of a Southdown sheep or a short-horn bull, but how about the French coach horse? It has been stated here what we Americans have done. We have improved the Merino sheep; we have developed two distinct breeds of hogs; we have made the American trotting horse, and it is my opinion that we have got the blood in this country of our own to make a coach horse the superior of the French coach, and that in the Mambrino family. I want a coach horse; there is more money for me in the coach horse than there is in the draft horse. I want a horse 1,200 to 1,300, 16 or 16½ hands, good style, good color, good action, that can trot in 2:50. Take a span of that kind of horses and they are worth \$2,500, and a single horse would bring \$800.00 to \$1,000.00. I have nothing against the French coach whatever; only I believe the best horse for the average American farmer is a general purpose horse, and I believe that here in America we have got that blood with ourselves. I have no stallion of the Mambrino Chief family, or no mares to raise, but have bought them in the market as they grow up. I have no ax to grind, but the question is what will the French horse give us?

A Member: What is your experience as to disposition of the Mambrino family:

Mr. Foster: The Mambrino is usually of a very good disposition. Of course in breeding you must weed out the animal of bad temper. Mr. Miller's horse was of that kind. Our President owns a horse of that breeding to-day; they have got them in Kentucky, and have got them in Ohio. I think Mr. Chaney has some of that breeding. But I don't think we have to go out of America to get blood to make us a good coach horse.

Mr. Chaney then called the attention of those present to the importance of speed in breeding horses for the home market.

Mr. Foster: I did not hear my friend Chaney, but I simply wish to say that my experience with the French coach horse is that there is not uniformity in color or formation.

Mr. Foster then referred to three batches of colts from an imported coach stallion, costing \$5,000.00, of different color and of different formation.

A discussion then took place between Mr. McLaughlin and Mr. Chaney, which could not be heard at the Secretary's table, and therefore it can not be reproduced in these proceedings.

President Levering: One of the speakers has referred to the horse which I own. Of course, I do not care to advertise the merits of that horse particularly on this occasion, but I will just say that he is a Mambrino horse, and so far as his disposition is concerned, I don't think there is a kinder horse in the State of Ohio. My wife, who is not much of a horseman, can drive that horse any where. As some of our friends have remarked, I think that by proper selection, we have the material here to make as good coach horses as there are in the world. Our standard bred horses of fine disposition are all we want, and by proper selection we can produce as good a quality of horse as can be produced any where. As Mr. Foster has referred to my horse, I take the liberty to say that he is a horse of that type. He is of fine form and I don't think there is any better horse. I have known him for several years. He weighs 1,350, and a number of his progeny will be as large as my horse and some will be larger than the ordinary road mares of our county.

Mr. Miller: This discussion has taken quite a range. There is one thing that has not been referred to by any of the gentlemen, except the gentleman upon the right, and then only in a slight way, and that I place as the foremost thing in breeding. A person expecting to breed, the very first and uppermost thing in looking at his stock, should be the disposition of the sire and the mare. The American trotter has been referred to. What

is a horse worth when he is of such a willful and sour disposition, if the person can not drive him to town without running into a fence corner, or running him off of some bank; what would a horse be worth as a family horse that would be liable to run away every time you hitch him up, or kick himself out of the harness? One of the principal laws of breeding is that like begets like or the like of some of the ancestors. Hence it is very important to know what the ancestors of a particular horse have been. Of course the near crosses are most important—the sire and the dam, and then the grand sire and the grand dam. The near crosses are the crosses that affect most the progeny. It is not way back in some thorough-bred “Messenger” or other great horse away back in the line of its ancestry, but the crosses close by. And hence in color, it has been well stated by our friend to the right here, that the coach horse has not been tried in this country long enough to know what he will do. Remember that like begets like, or the like of some ancestor. Now you have a bay horse; if his dam was a sorrel, and the sire was a gray, and the grand sire was a dun, and the grand dam was a roan, what can you expect of the progeny? Will all his colts be bay? You don’t know any more about what kind of a colored colt you are going to get than any thing in the world. You take a horse that is bred in this way and you don’t know what form you are going to get; you don’t know what disposition you will have. Now my friend back here that is interested in the imported coach horses tells us a great many interesting things about the French coach horses. He has failed to say much about the Cleveland bay as a coach horse. That line of horses has been carefully selected in the line of that ancestry. Whenever a horse was found that was not a bay, they discarded it and kept on breeding the large bay mares to a thorough-bred stallion and finally they got a class of horses, which they call the “Cleveland bays,” and my friend well knows that a few years ago there was only a handful of them left; just last year—I think it was last year—I was where there was one of the best bred Cleveland bays on the market, that is one of the longest in that line of horse, the “Cleveland bays,” whose progeny was a sorrel.

I think my friend over here is right when he says that the coach horse in America is a new invention. They are a rather new importation and they have not been tried. They are not like some of the families in the trotting line. I say you get a horse that is bred in the trotting line, whether it is as to color, as to gait, as to disposition, or whether it is for spavin, or ringbone, or I don’t care what it is, you can expect the progeny to develop that trait which is predominant in the ancestor, and that is just as sure as two and two make four. A horse must be bred in the line of whatever you want. It is very poor policy if a man wants a race-horse for him to go and breed to some horse other than a standard-

bred horse for four or five crosses, that can't trot a mile in four minutes, and if his sire was one of the same kind, his chances would be just that much less.

Referring to the topic I first spoke of, disposition, we have tried that several times in this country. My friend, Mr. Chaney, understands something about that class of horses. He has lived down here in the region where that once famous John Rarey lived—the man that brought over Cruiser to this country. I have often thought that it would have been better if that horse had been left on the other side of the Atlantic. We have seen other horses with the same disposition in the State of Ohio. We had Basterdes, another horse of the same disposition, and nearly all his colts were inclined in the same direction. What do we want with that kind of a horse? Look to the disposition the very first thing, and then good form and quality, and you will have the horse you want.

Mr. Weinland: It seems to me that we are overlooking the most important thing in the coach horse, and that is the size. In order to have a coach horse you must have size. I don't care how nice a horse is, or how nice he acts, or what neat action he may possess, or how fast he may trot, if he hasn't size he is not a coach horse. We are now talking about coach horses; we are not talking about a nice matched team for a gentleman to hitch up and spin across the country at a 2:30 gait. That is all right enough in its place; I believe in that kind of a horse; but we are talking now about coach horses. My belief is that if the standard-bred horse is of proper size so as to give to his progeny the proper size when crossed with our native mares, that you get the very best coach horse that can possibly be thought of in America. But so far as my own observation goes, the large majority of the standard-bred sires are too small to make good coach horses, when crossed with our ordinary mares. Of course there are some exceptions, but the 1,300 standard-bred stallion is the exception and not the rule. I believe—I thoroughly believe that we ought to go to work, somehow or another, and do as is being done in Illinois. One or two breeders in Illinois make a specialty of breeding large standard-bred horses, and have for several years, and are succeeding. At the Chicago show last year they won a large number of premiums with the standard-bred coach horses from the imported French coach stallion and Cleveland bays, and I believe that man is on the right track; I believe that he has got the coming coach horse of America—the standard-bred horse with our native mares. You can not take a 900 pound sire and cross him with a 1,000 pound mare and expect to get a coach horse. You get a nice buggy horse, or a driver, or a trotter, but that is not a coach horse. In the absence of this class of horses or sires, the question is: "What is the best course to pursue?" I have looked

around quite a good deal to get a horse of that kind myself. I have looked around quite a little with a view to find a standard-bred trotting horse of proper size to make a coach sire, but I tell you, gentlemen, they are very scarce. So that in the absence of that kind of horses, until we can get what we want, it seems to me that we have to do the next thing and use others of proper size. Until we can get a horse which will show up with the proper size we must do the next best thing and use sires of the proper size; then get fillies which will show up with the proper size, then cross them with the larger standard-bred horses, and finally, in the course of time, we can reach the point where we can produce the American coach horse, and which I think will prove the ideal horse. I am no advocate of the French coacher. I don't own one, have no interest in any, and am not very partial to them, but I say that in the absence of something better I would be very glad to use the French coach horse so far as breeding is concerned. I am not a believer in the breeding of either Cleveland bay or a French coach only for this purpose. I believe they are both the result of crosses of rather recent origin; I don't believe the French coach is a true breeder. I know he is not as to color or formation. I believe the Cleveland bay is a much truer breeder both as to color and as to formation than the French coach, but I don't like the Cleveland bay—I don't like his action. As a rule he is lazy, has not the style of the coach horse, has not the neat action, and as a rule he is not the equal of the coach horse in these particulars. So, gentlemen, I say then if you will give me a standard bred trotter of the proper size, and if he is in a line of breeding as to size as well as to his trotting qualities, and goes back far enough so as to insure size, then you have got my idea of the American coach horse, the ideal horse.

Mr. Miller: Just bear with me a minute. The gentleman knows well that there are plenty standard-bred horses 16 and 16½ hands high in this country; and as has been referred to several times, you take the Mambrino Chief, they probably have as much style as any one of the trotting families. They are fine styled at both ends. They have a fine carriage, long in the neck, and they have good tails. Now I could refer the gentlemen to horses in the State of Ohio that weigh 1,200 to 1,300 which belong to the Mambrino Chief family and to quite a number of them—if they will come over in our county, I will show them some. I just made reference to one horse of that type in Columbus. Mr. Westwater's horse was a five-year old this spring; he is 16½ strong, and a horse that will weigh when he is in flesh 1,300, and 2:30 will not stop him this year and I guarantee that he sold for more money than any French coach horse or Cleveland bay, or any of that class ever sold in the city of Columbus. If we take brood mares and breed them with a view to making coach

horses and breed them to this line of horse that has been brought up to a purpose, and with the object in view for years and years, then we will get a coach horse that will be worth something. As our friend Mr. Chaney said a while ago, you must not forget speed. I have had prospective purchasers come to me more than once and say: "I would like to get a good horse but I don't care any thing about speed; I don't want a trotting horse." But you take them out and show them two horses one a good handsome animal without speed but the other a speedy animal and you hitch up and go down the road to try the horses and he finds that one can trot under three minutes but the other can't trot it in four, and you will find that he will take the one that trots it in three minutes every time, although he does not want a trotter and don't care for speed. They will do it even if the horse does not look as good. He will have him if he has got a little blemish on him just so he has got speed. It is not speed they want, yet they will pay more for that horse. Take a horse such as has been described here by half a dozen gentlemen, that can trot in three minutes, and he will bring more money than any four horses that are just as good looking which you can bring into Columbus but can't trot in five. They want a horse so that when they hitch to their surrey and drive down Broadway, they don't want every scrub that comes in from the country to run around them, or every plug hitched to a grocery wagon in town to outclass them. They don't want speed but they will buy it and when you get speed you must come to the American trotter, the standard-bred roadster. There is where you get your speed and then you get size and quality. Quality is one of the first things you want. You don't want a horse that will run away or kick, or one that has a bad disposition. Disposition in my judgment is the first thing to look after. If you want a coach horse, of course as my friend Weinland suggests, you must have style, but we have style in the American trotter. In my judgment, gentlemen, we have a better coach horse in the American trotter than there is in any thing across the water, and I don't care what country you go to. We have size, we have got style, we have got good limb, we have good disposition, we have got quality, we have got neat action, and we have got that which to the American people is all important, we have got speed.

Mr. McLaughlin: They make a style of wagon now-a-days that will carry either four people or two people; they have two seats, one of which will turn over thus making it a one-seated vehicle, and they say it will do just as well for four people, or just for two people, depending upon what you want. That is the same argument that is used by my friends in speaking of the American trotter. If you want speed he has got it; if you want style he has it; if you want size he has it. I don't think a

trotter can be bred into a coach horse. A trotting horse don't weigh over 1,400 or 1,500 pounds; a coach horse don't weigh 900 or 1,000 pounds. A coach horse don't need to trot in 2:10 or 2:15 or 2:20. Very often in France they do have them where they trot it in 2:30. I sold a horse in New York, a fine coach horse, three years ago; he was a sorrel horse with two white legs, and a white face, weighed 1,400 pounds, and that horse could trot in 2:28.

President Levering: We have spent all the time upon this subject that we should. If there is no other business to come before the Institute during the afternoon session, a motion to adjourn until 7 P. M. will now be in order. We have a program for this evening which will be very interesting and I hope that all the members will find it convenient to be present.

Upon motion, the Institute then adjourned until 7 P. M.

EVENING SESSION, JANUARY, 14, 1892.

President Levering in calling the Institute to order said:

We will now come to order, gentlemen, and proceed with the exercises. The first exercise on the program is "The Importance of Sheep Husbandry to the Farmers of Ohio," by Hon. William Lawrence, of Bellefontaine, Ohio.

Hon. William Lawrence, then came forward and read to the Institute the following paper:

THE IMPORTANCE OF SHEEP HUSBANDRY TO THE FARMERS OF OHIO.

GENTLEMEN OF THE INSTITUTE OF STOCK BREEDERS AND FARMERS:

I am here by invitation of the State Board of Agriculture, to speak to you on "The Importance of Sheep Husbandry to the Farmers of Ohio." I assume that this topic implies that I should speak not merely of sheep husbandry as *it is*, but also as it *should be*, its utility, and value.

The assessors' returns for April, 1891, show in Ohio 3,797,041 sheep, not including spring lambs. After allowing for sheep sold for mutton, it is safe to say there are four million sheep in Ohio, worth \$12,000,000.

Sheep husbandry is important in many respects; to seven only I now invite attention.

I. *First of all, it is important to preserve and add to the fertility of our lands.*

Sterility is gradually coming upon them, and this can only be averted by increased pasturage, and best of all by a speedy increase of our flocks of sheep to be permanently main ained.

This is readily demonstrated: The surface of Ohio, including Lake Erie to the boundary line, includes 42,500 square miles. The land surface, as reported by the General Land Office, includes 39,964 square miles, or 25,576,960 acres, of which 5,364,321 are not

by county auditors reported to the Auditor of State as "cultivated," "unused" or "wood-land," because covered by interior lakes, reservoirs, rivers, roads, cities, villages, or included in lands owned by the United States, the State, or others not taxed, as cemeteries, church lots, etc., leaving 20,153,569 acres occupied for the years 1889 and 1890, as follows :

Year.	Acres.	Pastures and meadow.	Lying unused.	Wood lands.	Total.
1889.	9,741,467	6,205,298	439,466	3,767,338	20,153,569
1890.	9,697,085	6,237,610	450,836	3,768,038	20,153,569

See Annual Report Ohio Commissioner Statistics, 1887, p. 6; Annual Report Secretary of State, 1890 p. 474, 558.

Of these lands, exclusive of woodlands, the statistics show for the last two years as follows:

Year.	Per cent. cultivated.	Per cent. in pasture and meadow.	Per cent. unused.
1889.	59.45	37.87	2.68
1890.	59.13	38.11	2.76

In round numbers, sixty per cent. of our cleared lands are being, and for many years have been annually cultivated, and probably another ten per cent. has been so continuously kept in timothy grass for meadow, with hay sold from farms, as to have been subjected to a process of deterioration in fertility equal to that produced by cultivation.

In other words, every acre of arable land has been, and is being, cultivated, three years out of every five, or assuming that the portion stated in timothy meadow should be regarded as in the same condition, every acre is on an average, thus subjected seven years out of every ten.

Small portions of our cleared land are so hilly, stony or marshy, that they are rarely tilled, so that the proportion of really arable lands actually cultivated, is fully as large as thus stated.

Continuous cultivation gradually impoverishes the soil, while pasturage preserves and adds to fertility.

Some of our alluvial bottom lands can be kept fertile for a long period, if cultivated seven years out of ten, but these constitute but a small portion of our lands.

All could be kept productive by the application of fertilizers, but it is not possible to procure these by ordinary modes of farming, and the expense of buying sufficient additional commercial fertilizers, even if practicable, would be so great as to render cultivation in ordinary crops for seven years out of every ten unprofitable, or for even three out of five.

Under present conditions, if continued, Ohio farmers as a general rule, will be gradually impoverishing their lands, diminishing their crop products, and in the not far distant future, sterility will brood over the State, and every county will abound in abandoned farms.

These dangers are imminent; the alarm should be sounded, and the proper remedy applied. These threatened evils can be averted, and Ohio farms can be made and kept "beautiful and fertile as the garden of the Gods." The way is plain. Lands generally

can not be kept permanently productive in the older States if cultivated more than half the time, except by fertilizers, beyond those produced in ordinary farming. We must diminish cultivation to an average of not more than fifty per cent. of our land; that is, withdraw 2,153,569 acres from cultivation, devote it to blue grass, red clover, alfalfa and alsike clover. This will enable Ohio farmers to graze and provide hay for at least 4,000,000 sheep in addition to our present number, or an aggregate in all of 8,000,000, besides adding somewhat to the number of our cattle.

This is the first and most important duty of the farmers of Ohio.

If others of the older states would adopt the same relative change, the 43,431,136 sheep now in the United States, would, within four years, be increased to a round 100,000,000, producing 800,000,000 pounds of unwashed wool, and not one pound of foreign wool would be required to supply any of our needs.

The American consul at Prague, in his report to the State Department, May 9, 1889, in discussing excessive cultivation of land, says: "Many of the farm lands in our eastern states have become exhausted."

This is alarmingly true in too many other states, north, south, east and west. The washing of rains on hill lands under cultivation will soon render them unproductive; and the lands of this class are no small part of our domain. The Treasury Department Wool Report of 1887 on wool says:

"Sheep grazing produces a tough grass, and it is estimated that a western sheep pasture, after five years' grazing, will support forty per cent. more sheep than it did the first year."

And the consular report to which I have referred, says that Bohemia, with only 20,000 square miles, has a population of six millions, and that its lands, used by an agricultural people for fourteen centuries continuously, have been kept fertile by "vegetables or grasses," following after a crop of small grain; in other words, by *pasturage*.

II. *The proper development of the wool industry will be a large addition to the wealth, annual income, and profit of Ohio farmers.*

1. An addition of 4,000,000 to the number of our sheep will add in the value of sheep \$10,000,000 to the wealth of Ohio farmers, and will add to their annual incomes six million dollars for wool and four million for mutton, or a total of \$10,000,000.

The distinguished president of the National Association of Wool Manufacturers, William Whitman, in his letter of November 22, 1889, to another eminent manufacturer Jesse Metcalf, of Providence said:

"The American staple wools are better adapted for the fabrication of satisfactory clothing for the American people than any other wool grown."

By far the larger part of Ohio wools is Merino, and none better of this class are grown in the world. We are the heart and center of the best Merino wool region in this country, and our true policy is to extend our increase chiefly to this breed of sheep, with a limited number of Shropshires, and some other of the best varieties of mutton sheep. Other portions of the United States, like Texas, California, and the territories, should supply most of the carpet wools needed, and much other wool.

The imports of foreign Merino unwashed wools for the year ended October 1, 1891, were 32,615,329 pounds, equal to about 40,000,000 Ohio unwashed; and of the class two wools, 5,343,291 pounds besides similar wools in the form of manufactured goods to the extent of 150,000,000 unwashed pounds, with so-called carpet wools added 94,775,433 pounds, or a total in round number of 300,000,000 pounds.

A proper increase of sheep in Ohio, and other states and in the territories can, readily within four years, supply all the wools of every kind needed for American consumption. Why then should our laws permit any to be imported?

But the point I am now more particularly presenting, is, that which relates to *increased wealth and revenue to Ohio Farmers.*

This is based on the proposition to which I have already referred, that the preservation of fertility in our soils imperatively requires a transfer of 2,153,569 acres of our land from cultivation to grazing and meadows.

This is a necessity to save our heritage of fertile lands. Continuous cropping as heretofore, means an annual loss in productive capacity, and so of value. It follows of necessity, that all that can annually be made from the 2,153,569 acres withdrawn from cultivation is clear gain, that is \$10,000,000 annually, as already stated. And there is no use to which these lands can, under proper protection, be so well or so profitably applied, as in sheep husbandry.

The low price of cattle proves, and for years past the competition of immense western cattle ranches, the low price of horses, as a result of electric motive power for street cars, the telephone and bicycles all admonish us, that while we may maintain our present cattle supply, we in Ohio and other states similarly situated, can not afford to largely increase these branches of stockraising.

During the thirty-nine years ending in 1889, our population increased 175 per cent., our cattle 185 per cent.

The portions of the United States where the best *Merino* sheep can be profitably produced are limited in area, with Ohio as the chief source of supply. West of the Missouri river *Merino* sheep are not and can not be kept equal to those in Ohio. The wool of much of that region is, by reason of alkaline soils, not at all equal to that of Ohio, Western Pennsylvania, Michigan, and States similarly situated.

The area for the best *Merino* sheep in this country is not likely to be over-stocked.

2. *The proper increase of sheep in Ohio would bring other pecuniary gain to our farmers.*

It will make an increased demand for corn and oats to supplement the pasture and hay furnished by the transfer of 2,153,569 acres to sheep husbandry. An increase of 4,000,000 sheep will make an additional annual market for at least 4,000,000 bushels of corn for stock sheep, and for 1,000,000 mutton sheep nearly if not quite 3,000,000 bushels, or a total of 7,000,000, worth an average of \$2,100,000.

With the needed reduction in cultivated lands, the annual corn product in Ohio would be about 80,000,000 bushels. The increased demand for 7,000,000 bushels would enhance the value of all that would remain. If other States would follow the example proposed for Ohio, it would be worth all the foreign markets that European crop failures could produce.

The total average annual exports of corn from the whole United States from 1870 to 1889 inclusive, was only 56,786,864 bushels, or 3.9 per cent. of all produced. Ohio produced about one-twentieth of the corn crop, so that our proportion of the annual export was 1,833,443 bushels, while the needed increase of sheep will make increased demand for nearly five times the export market, and then *the foreign market will still be open to us besides.*

The food supply is increasing more rapidly than our population. In a period of thirty-nine years, ending 1889, the population in the United States has increased 175 per cent., corn has increased 257 per cent., wheat 339 per cent., oats 411 per cent., swine 66 per cent., and cotton-seed oil is just recently made an article of food like lard.

The necessity for increasing our home market for corn and oats is pressing. The importation of wool *diminishes the home market*, an increase of our flocks *enlarges it*. Our policy is, import no wool, produce all needed, enlarge the farmer's market.

If we adopt a policy which requires our farmers to sell their products at prices fixed in the markets of the world, and thus in all they produce come in competition with the cheapest labor and lands in the world, the farmers will justly demand that they shall exchange their products for goods brought in the markets of the world, and at the low level of foreign prices. Farmers must have the whole American market, and if foreign skill is required to supply our wants, let the skill and men to exercise it be imported to consume our farm products here.

If other States will do their part in the needed increase of sheep, our wheat product will be reduced, the home demand for corn and oats will be increased, we will have a *home market* for all our cereals, and we will cease to care for a foreign market, and foreign prices will not, as now, fix our prices for farm products.

Under present conditions a foreign market for farm products may be desirable, but there never has been and never can be any considerable permanent foreign demand for American corn or oats, and in a few years at most the East Indies, Russia and the Argentine Republic will supply the outside world with wheat at such prices as would be ruinous to American farmers. The vast crop failure of last year in Europe is abnormal, making a demand for American wheat and corn that may never come again.

There is not one highly civilized country in the world which exports food products except the United States, and under proper legislation we will cease to do so. Politicians humbug farmers with the idea of permanent foreign markets for farm products; statesmanship provides them with a home market. With a foreign market, our farmers compete with the cheap labor and lands of the outside world, and receive in return what is left after paying freights, commissions, profits of middlemen, and the plundering extortions of combinations of exporters.

Every bushel of grain exported carries away fertility from our soil to enrich foreign lands, never to return to us.

All this cost, robbery and loss can be avoided by an adequate home market with which our farmers will exchange their products for their American value.

The scheme to supply eastern manufacturers with free foreign wool, and drive our farmers to increased production of wheat and corn and beef and pork, is simply a conspiracy to depress the prices of farm products, plunder our farmers, and ultimately cover the great center of the continent with a barren waste. Nearly a hundred million dollars annually sent out of the United States for foreign wool, including that imported in manufactures, should be kept at home and go into the pockets of American farmers in exchange for American wool and corn and oats, thereby increasing the demand for these cereals.

And this money is sent to countries that take substantially nothing from us but money.

Every branch of agriculture is afflicted with over-production, except that of supplying wools and mutton; here there is a vast under-production. Let us move into the promised land, occupy it, and drive out alien intruders, and relieve the ruinous effects of over-production in wheat and corn.

That valuable farm paper, "The Country Gentleman," has well said: "The home market for wool is the only home market for farm products that was never supplied. Why not supply it? It is anomalous to complain of not having home market for farm produce, while this great gap remains unfilled. It does not tally well with the boasted agricultural erudition of the North American Farmer."

Every pound of wool imported is equivalent to the import of the grass, and hay, and grain that make it. Statesmanship requires that we should cease to import grass, hay and corn into a country where these already abound in more than abundance. Thus every farmer in the Republic, though he owns no sheep, is directly interested in sheep husbandry, and should aid in securing its benefits.

3. *Sheep husbandry converts into wealth much that would otherwise be lost.*

Sheep will utilize, and then destroy, briars, noxious weeds, and sprouts, that would otherwise flourish in luxurious abundancy, or require the labor and cost of men for their destruction. Even a luxurious crop of rag-weed can be mown and utilized for the winter feeding of sheep.

4. *The proposed increase of sheep husbandry by adding \$10,000,000 to our tax duplicate, would share and aid in relieving the burden of taxation on other property.*

But the increase in the tax duplicate would be even greater than this. New barns and sheds would be multiplied on our farms to adorn and add to their convenience and utility, and also share the burdens of taxation.

5. Thus far I have spoken of the absolute necessity of reducing the number of acres cultivated, and I have endeavored to show how this may be done, and still make our lands more profitable.

Our present system is gradually but surely bringing sterility to our soil. The proposed system will as gradually and as surely bring increase and increasing fertility. For a time it will lessen the product of our cereals, more than compensated for by sheep husbandry at all times, and in a few years, especially with a large increase of sheep, increased fertility will be followed with larger crops of grain, hay, and grass, than ever before. Thus with increasing population, increasing fertility of soil will ultimately enlarge all our crops, greater than ever before, and all of sheep husbandry will be a bonus, a blessing—added wealth.

With increased crops, even reduced prices will furnish ampler rewards to farmers than can now be realized. To the farmers of Ohio, let us appeal to re-organize agricultural industries so as to preserve our fertile soils and make them profitable.

III. *Sheep husbandry is important because it utilizes some lands which can not be permanently, so well, if at all, used for any other purpose.*

In some of the States, as Texas and California, and in some of the Territories, there are vast areas of land which can not be used for any purpose but grazing sheep or goats. These are the regions for the production of so-called carpet wools. But we are now dealing with Ohio.

It is not possible to obtain accurate statistics as to the condition of Ohio lands, but it is safe to say, that in the south-eastern tiers of counties, with some elsewhere, a full half million of acres is almost worthless for any other purpose but sheep husbandry.

Some of it is fertile, some partially sterile, but capable of fertilization by sheep husbandry. Its steep hill sides in many places can not be cultivated, in others they can be only for brief periods, because otherwise the rains would soon wash away the soil, but all can be used for grazing sheep, and the valleys can be made to produce the needed hay and corn.

Sheep can graze where cattle and horses can not, and in some localities the water supply will support sheep but is not sufficient for cattle or horses.

Sheep husbandry can be made to utilize these lands, impart to them a value they would not otherwise possess, and thus add to the wealth, capacity and resources of the State.

IV. *The increase of sheep husbandry as proposed will add to the value of Ohio farms.*

The value of lands depends largely upon the number and kinds of uses to which they can be applied. Diversified industries are as essential in agriculture as in manufactures, and no nation ever was or ever can be great without all these.

If it were possible to restrict Ohio farmers to the sole production of wheat, the value and selling price of all the lands would depreciate to an insignificant sum. Multiply the uses to which they can be applied, their productive capacity will increase, rotation in crops and grass will improve soils, increase value, and add to the number of persons desiring to buy them. If the Ohio farmers will increase the number and size of flocks until they include 8,000,000 sheep, with increased demand for lands, increased productive capacity, increased fertility and increased numbers of buyers, at least five dollars will be added to the value and selling price of every acre of arable land in Ohio, and that means more than a hundred million dollars.

V. *Sheep husbandry is important because of sanitary and cognate financial considerations.*

Sanitary conditions are affected by food and clothing. The Hon. James A. Grinnell, of Massachusetts, in an address before the State Board of Agriculture, Dec. 2, 1891, called attention to the remarkable experiments conducted by Dr. Beaumont more than

fifty years ago, with his conclusions, recognized as authority now, which may be thus summarized:

Mutton is more digestible than any other meats generally in use, assimilating more readily in the human organism, and is consequently more nutritious. It is the most economical to purchase at the usual prices. English chemists have shown the comparative loss of soluble matter, fat, juices and water in cooking 100 pounds of beef and of mutton, as follows:

	Bolling losses, pounds.	Roasting.	Baking.
Beef.....	28 1-2	32	30
Mutton.....	21	24	

Thus a leg of mutton, and beef, each costing, raw, 15 cents per pound, when cooked would cost: Beef, boiled, 19½ cents; mutton, 18½ cents; sirloin of beef costing raw 16½ cents, cost roasted 24 cents; while a leg of mutton at 15 cents would cost roasted only 22 cents.

The people of Ohio should increase their consumption of mutton and to a small extent decrease that of beef from economical consideration, and especially decrease the use of salt meats of all kinds, and of pork, fresh or salted, and of bacon, for sanitary reasons.

With the prevalence of hog cholera and trichina, it is more profitable to raise sheep than hogs; there is more safety in eating mutton than pork. Beef is healthful, but for farmers not so convenient for supply and use as mutton. Every farmer can slaughter one mutton sheep, and supply two or three neighboring farmers with parts, who in turn can reciprocate, and then each will have healthful, fresh meat food all the year round, without the trouble of going often miles to butcher shop, and without paying the butcher's profit.

It would under this system be unnecessary to sell beef cattle at 3½ cents per pound, as now, and buy butcher's beef at 12 or more cents, a large margin of profit, beside the hide, hair, tallow, horns and fertilizers, all lost to the farmers.

Farmers can save thirty per cent. on the cost of their fresh meat supply. In due time, if this system be adopted with a full knowledge of its merits, the consumption of mutton would and should so increase that Ohio would add 2,000,000 to her sheep of the Down and Shropshire varieties, justly famed for the excellency of their mutton, far superior to the Merino.

2. *There are sanitary considerations connected with clothing.*

If wool were as abundant and cheap as cotton, woollen manufactured goods would in a large measure supplant the use of cotton. People to a large extent use clothing made of that which they can most readily procure. With wool as abundant in this country as it should be, woollen goods would be much more largely in use for clothing.

By enlarging sheep husbandry wool production is increased. An able article recently published alleges and proves that:

"Woollen clothing is alike superior to other material in both cold and hot weather. It meets and modifies the effects of the variable condition of exercise and temperature."

The article quotes Dr. F. H. Bosworth, of the Bellevue Hospital Medical College of New York, a high authority as saying:

"The most important function that goes on in skin, is that by which the body is kept at an equable temperature by means of perspiration. This function of perspiration or heat radiation, takes place best when the fabric next the skin is a thoroughly porous one.

"We have no fabric comparable to pure wool, in this respect, the virtues of this fabric being due to the fact that the wool fiber is highly elastic, and also curls upon itself in such a way, as that when converted into thread and woven into a garment, it

still affords a highly elastic and porous textile fabric which best admits of the escape of heat.

"Silk is very objectionable. The same is true of cotton and linen."

Wool stands at the head of the materials out of which clothing is made. God in his providence made wool for a purpose, and wherever sheep will live and thrive, woolen clothing should be worn.

Sheep husbandry is important as making available what the Almighty has provided.

VI. *Sheep husbandry is important because it gives employment to labor and thus adds to population and wealth.*

An addition of 4,000,000 of sheep in Ohio would give employment to carpenters and masons, to erect barns and sheds; to men to clear lands, make fences and care for sheep. With increased incomes all these would more largely patronize bakers and grocers and schools, and colleges and churches.

This is a little outside of the general theme of "The importance of sheep husbandry to the farmers of Ohio," but even they will in turn share the benefits they give to others. Our interests are so blended and interwoven, that the prosperity of any one great industry adds to all others.

But the wool industry directly gives employment for a portion of the time of more than a million of wool growers. Wool manufacturing gives employment to less than 200,000 persons, including women and minors; less than 200 men in manufacturing have dictated legislation against wool growers and the time has come when farmers must assert their rights.

VII. *Sheep husbandry is important because it adds to the supply of hides and skins essential to the needs of our people.*

The custom house value of goat skins imported for the fiscal year 1891, was \$11,633,745, and of all others, \$16,501,344. Official statistics do not show what portion consisted of sheep pelts. But it is certain that with a needed addition of 50,000,000 to the sheep now in the United States, there would be consumed for mutton and otherwise, more than 20,000,000 sheep annually and an equal number of pelts would be produced. These would be tanned and utilized for ten thousand purposes, including the manufacture of so-called kid gloves, portions of boots and shoes, book binding, etc. These pelts would supply and supplant what would in various forms be imported, and would build up manufacturing industries employing millions of capital, giving employment to labor, adding to our wealth, industry and enterprise.

Ohio should furnish its proportion and share in resulting benefits.

Time will not permit me to enumerate all the elements of importance attaching to the wool industry. It is important and essential to national independence, in peace and in war. It appeals to patriotism to national pride, to national safety, honor, renown, wealth, health and happiness. Every good citizen will rejoice in its growth and success. Our rivals and enemies alone will rejoice in our failure to maintain it in the full measure of its utility.

WOOL GROWERS SHOULD HAVE THE WHOLE AMERICAN MARKET.

The complete success of the wool industry requires that American wool growers shall have the whole American market. If any part be surrendered to foreigners, it is a surrender of American independence of so much of our interests—sources of profit and wealth.

NO NEED OF FOREIGN WOOLS.

American wool growers can, and under proper conditions, will supply all needed wools. No properly informed man denies their ability to supply all needed Merino and long wool—wools of the first and second class.

No foreign wool is "needed to mix" with ours in the manufacture of woollen goods. The claim has been made that Australian wools are needed for this purpose, but it is denied by the able Secretary of the Department of Agriculture, and one of the most intelligent, honest and able of the great wool manufacturers, Charles Fletcher, of the Providence Worsted Mills, in a letter, February 18, 1890, said:

"The talk of mixing Australian wool to make goods required for this market, is all nonsense, as Australian wools are only used here when they are cheaper than domestic wools."

The American Consul at Sydney, New South Wales, G. W. Griffin, in his report to the Department of State, March 23, 1891, says:

"The samples of American wools, and especially those grown in the State of Ohio, sent to the Melbourne International Exposition, were admitted by experts to be far superior to any thing of the kind ever grown in these colonies." Consul Reports No. 128, May, 1891, p. 112.

Much other testimony might be added, and to the same effect.

It is claimed that American wool growers will not find it profitable to raise so-called carpet wools. This again is a fallacy. This country needs 25,000,000 sheep of the best mutton variety—The Downs, Shropshires, Lincolns, etc., producing an average of seven pounds of wool per head, or in all 175,000,000 pounds of unwashed.

More than one-tenth of this consists of "hiplocks" and "breech" wool, 17,500,000 pounds, so coarse and hairy as to be fit only for carpets, and it is in this wool that Ohio is directly interested in preserving to the wool growers of this country the whole of the so-called carpet wool production.

If imports are permitted, they will be used for the manufacture of clothing goods, and the better portions to mix with Merino and the long wool for the same purpose. It is better to mix American third class wool rather than foreign.

Capt. A. E. Shepard, formerly President of the Texas Wool Growers' Association, has testified before the Committee of Ways and Means in Congress, that Texas alone can produce all the third class wool, and under proper conditions will do so.

The able statistician of the Department of Agriculture, Prof. J. R. Dodge, in his monthly report for June, 1890, said:

"So-called carpet wools, worth from 8 to 28 cents per pound, used for the coarsest carpets and for the *finest fabrics*, have been imported at a discrimination [low duty] utterly trivial and ineffectual. But for this American manufacturers would consume very little except American wool."

The wool industry is important because its mission is for universal good. It has received the sanction of the wisest and best of all ages, and the gracious favor of the host of heaven.

It feeds the hungry, clothes the naked, adds fertility to the soil, and prepares the way for bounteous harvest. The lamb is the emblem of innocence and purity. Abel, the first keeper of sheep, made an acceptable offering to the Lord from the firstlings of his flocks. Cain cared nothing for protection to the wool industry.

Job was a farmer, flock master with fourteen thousand sheep.

When Noah, after the waters of the flood had subsided, had offered his sacrifice, God gave him permission for the use of meat as food. "Every moving thing that liveth shall be meat for you."

Solomon, with the splendors of his magnificent establishment, provided his household daily with a hundred mutton sheep for food.

When the Savior was born, his coming was first announced to the Shepherds in Judea as they watched their flock by night, and ten thousand angels—a heavenly host—proclaimed to the listening "Peace on earth and good will to men."

At the conclusion of Mr. Lawrence's paper, the Chair announced that the discussion upon this subject would be opened by Mr. H. Warren Phelps, of Westerville, Franklin county, Ohio.

Mr. Phelps then read the following paper:

Let any observing man visit the farms of Ohio, and note the kind of live stock which he keeps, and compare the condition of the surroundings.

This he must do in order to get a true estimate of the importance of any kind of live stock to the farmer.

It is true that statistics of amount produced and sold, as made up and published in pounds and dollars, in our agricultural reports give us some idea of the value of any product to the producer, yet there are other values which are not considered in those reports.

There are values left on the farms by all kinds of live stock, which are never estimated in those reports, and the values left by sheep are far greater than that of any other animal. The digestive organs of the sheep are more perfect for the complete change of food into the complete fertilizer, hence I shall claim that the sheep industry is not fully appreciated by our farmers.

STATISTICS.

I shall not attempt to go very far back to gather any statistics in regard to the productions and sales made of sheep. I find in the market report in *The National Stockman and Farmer* of date June 9th, 1887, that the receipts of sheep in that market were 18,115 head against 22,615 head the week previous, and 21,483 head the same week in 1886, while on June 11th, 1891, the receipts were 14,285 head against 7,414 head for the previous week and 13,976 head the same week in 1890. This shows a great falling off in market receipts in four years, but the price paid was eighty cents per hundred higher, and while common and inferior sheep sold fairly well in 1887, when there was a large supply they were draggy and hard to sell in 1891 when the supply was actually short. This is evidence that the consumers are discriminating against inferior mutton. The people are beginning to learn that there is a vast difference in the quality of mutton.

Again; we think that the falling off in receipts of sheep in the market in 1891 was caused by the low price of cattle and hogs and their products of 1890; the farmer seeing more profit in holding his sheep to feed, and using the mature ewes in breeding; using the best sires of the South-Down and other Down breeds. The rise in price of sheep and lambs during the last year, and especially during the last few months, has placed large sums of money in the hands of farmers, and the industry has given much more satisfaction than any other one industry. The great importance of the sheep industry is now readily seen by many who refused to keep sheep when prices were lower. With a small flock of superior bred Southdowns—for I have bought the best bred sires that I could find, paying \$60 for one and \$45 for another, from the best flocks of New York—I have realized a better profit than from either cattle or hog raising.

For fifteen years I followed buying and shipping cattle, sheep and hogs, and while riding over the counties of Franklin, Union, Delaware, Morrow and a part of Licking, I observed that the farmers who made sheep raising their main business, were in better circumstances than were their neighbors who were engaged in raising cattle and hogs. Their farms were in better condition, they had better and neater buildings, and their wives looked fresher and healthier; they were not worked to death in order to prepare meals for hired men who raised the corn with which to feed cattle and hogs. We will tally one here in the saving of doctors' bills in the family.

The wool which is produced from a sheep pays well for its keep, even at 25 cents per pound, when we have sheep which will shear from six to twelve pounds; and any other

kind of a sheep had better be sent to the butcher. We do not live in the kind of an age of low averages now. My own flock of Southdowns shear six to ten pounds the last week in April. A few Merinos sheared fifteen pounds of wool last April, which I sold at fifteen cents per pound, averaging \$2.25 per head. That was much better than selling hogs at three and one-half and cattle at four cents.

There is no time in the year that a sheep will not pay for its cost of keeping. If it dies soon after shearing, the carcass fed to chickens will produce a plenty of fresh hen's eggs, or if fed to hogs, we get cost if the sheep dies later, the growth of wool pays out the cost.

We consider that, in careful hands, sheep raising pays a better profit than any other kind of live stock on the farm. But we would not advise any one to go into the sheep industry who does not feel like being industrious, and who does not like to get up early in the morning.

The lamb trade of late years has been a very profitable one. That is, the raising of the mutton varieties. Cross on the large Merino ewes the best Southdown rams, or other Downs, and raise lambs as early as possible. If the owner is inclined to be lazy, he had better let them be born in May, so that they may not need care, and the profit from the sale of those early lambs will surprise the new beginner.

I claim that the rearing of early lambs for market is only in its infancy in Ohio. As the cities increase in population the wealthy citizens vie with each other to have the first lamb chops of the season. We should encourage the importation of the best mutton sheep so that we may have such flocks from which to select our breeding sires.

President Levering: The subject of sheep husbandry has been pretty thoroughly discussed in all its phases. We have some papers upon a kindred subject, and it might be well to hear those now and then discuss all at the same time. The next subject is "Reform Needed in Our Methods of Handling and Marketing Wool." Mr. F. C. Stanley, of Edison, Ohio, is on the program for the first paper upon that subject. I understand he is not here, but that Mr. Cowden has been substituted. Mr. Cowden is a wool-grower, well informed upon this subject, and we will now hear from him and afterwards, Mr. Bethel.

Secretary Bonham: I wanted to say that Mr. Stanley found it impossible to prepare a paper at the time indicated, and I then invited Mr. Cowden to take his place, but I understand Mr. Stanley has since that time prepared his paper and is ready. Therefore we have two papers, one from Mr. Stanley and one from Mr. Cowden, and also a third paper by Mr. Bethel. I would suggest, Mr. President, that Mr. Cowden come first, then Mr. Bethel and then Mr. Stanley, changing the order of the program to that extent.

Mr. W. N. Cowden then said: Mr. Chairman and Gentlemen: Quite recently your Secretary, Mr. Bonham, informed me that I was expected to either furnish a paper or a substitute. I thought at the time I might promise to obtain a substitute, but failing in that, at the last moment I have prepared a hasty paper upon this subject. Other duties have prevented me from giving the time and attention to it which I would have desired.

Mr. Cowden then read to the Institute the following paper on
REFORMS NEEDED IN OUR METHODS OF HANDLING AND MARKETING
WOOL.

That there are reforms needed in the method of handling and marketing wool, goes without saying. If you go into a woolen manufactory when fleeces are being opened, you will see sheep shears, whetstones, manure, dust, dirt, straw, dead wool, sections of sheep pelts, and other article too tedious to mention. Charity for the wool grower, requires me to say that the sheep shears and whetstones got there by mistake, and I wish I had charity enough to say as much of the other substances.

That it would enhance the value of every fleece of Ohio wool if carefully and honestly handled, also goes without saying. I will confine my paper to the first part of the subject, the handling, as I have no wool growers' ware house to recommend, except as we may know an eastern commission firm whom we can trust with the selling of our wool.

In the proper handling of wool, we can not confine ourselves to the sheep barn on shearing day, but we go back of that date and say that to have good wool to handle, we must have a good breed, uniform and healthy, the sheep must have nutritious food all the year, that a uniform, strong fiber may be grown. This is especially true in the fall months, when the system of the sheep, in some way warned of the approaching winter, begins to put on a heavy coat of wool for its protection and this increased growth makes a heavy demand on its vitality. At the approach of spring, and before turning on grass, all sheep should be carefully tagged around the breech, to prevent the wool from being soiled and then thrown away on shearing day. If sheep are to be washed, a foolish, useless and unnecessary practice that has come down to us from antiquity, take the first warm day in May in this latitude and wash in running water, box, or swim the sheep up stream as often as necessary to thoroughly cleanse the wool. Turn sheep on a shadeless, well sodded field and shear in from five to twelve days according to weather. If warm the first named time is long enough, if showery, or cloudy, or cool, it will require the latter named time. Sheep should run after washing until the sheathe of oil that envelopes the fibers, broken by washing is reformed again. Then the wool will have a lively, bright appearance. Shear on a clean barn floor cutting the fibers close to the skin and cutting each fiber but once. Fibers cut more than once go into a lower grade, or else fall under the cords and is used for shoddy or carpet wool. Tie each fleece with the clean fibers by itself. If wool of different grades are mixed in a given fleece all the loose wool goes to the lowest grade represented in the fleece. The buyer will tell us to do as they do in Australia, put all the leg, belly and breech wool in a barrel or box by itself. I know a wool grower who did this one year. The buyer paid him 36 cents per pound the same he paid his neighbors, and gave him 15 cents per pound for the wool untied. He received great praise at the buyer's barn for his nicely handled wool, but his neighbors received less praise and more money. He learned that year that the loose wool was worth more than twice as much inside the fleece, than outside of it, and it is not necessary to say he never repeated the new way of handling wool.

Wool should be loosely tied with small twine, by hand, or in box, with the inside as it grows outside. It should be loose, so that the buyer can thrust his hand into the fleece and know what it contains. It should have just enough twine to hold it together perfectly until it gets to the manufactory. It is a punishable offense to put unwashed tags or dead wool into a washed fleece, and I should think that little of this practice prevails in Ohio. If such practice exists it could easily be changed by a prosecution of the offenders.

If wool is to go to the manufacturer unwashed, it should be shorn early in April and handled the same as washed wool. It is right and legitimate to put in unwashed fleeces all the wool, grease and sweat locks that grow or accumulate on the sheep, but none of the inside of the sheep belongs to an unwashed fleece.

Unwashed wool is always sold on its merits, the reduction being one-fifth, one-fourth, one-third or one-half according to condition and merit. Why should not all wool be sold on its merits? An affirmative answer to this question indicates one of the ways by which a reform in the manner of handling wool may be brought about. The final test of the value of a fleece of wool is the number of scoured pounds of wool it contains and it is just as easy to estimate the scoured pounds in an unwashed fleece as in a washed one, and seven-eighths of all the wool used in the United States is unwashed.

Wool as now bought is about as follows: Some one gets a commission to buy wool for an eastern firm at one-half or one cent per pound, and the amount of his earnings each day depends on the number of pounds bought. He starts bright and early on the fastest horse procurable, and buys all the wool he can get at the figures he is allowed to pay. The good wool bought under value "evens up" the bad wool bought over value and so the eastern firm is satisfied and the buyer pockets his commission and gets another order and so on from year to year. Of course he takes all the reduction and all the weight he can get, as this helps to swell his commission. If he is shrewd and observing in the course of time he can tell wool from cotton and he may after while know something of grades and even breeds, but if he never learns these non-essentials, no matter so his whole purchase averages up all right.

The Secretary of the State Board of Agriculture told your speaker lately that he delivered his wheat to an elevator. It was nice and clean and the buyer kept it by itself. When the buyer was asked why he kept it separate, he said "to grade up unclean wheat." In like manner every man who carefully handles wool, helps to "grade up" his neighbors' unclean and carelessly handled clip and so the buyer thus daily offers a premium for carelessness, if not a money temptation for dishonesty.

Our only remedy now is to not offer our wool for sale until these buyers have run their course, and then a careful buyer (and there are such in all neighborhoods) comes along who buys with some regard to condition and merit.

The wool grower, who carefully and honestly handles his wool soon gets a reputation that is worth several cents per pound to him on his entire clip, and when a year comes when the local buyer will not pay him for his care, he can easily consign to a responsible commission house, where merit rules and wins every time. I knew a wool grower who wrote his name and address on clips and placed them in each fleece as tied. When these fleeces were finally opened at the place of manufacture, a request came for all his wool as soon as sheared, to be consigned direct to the manufactory.

I have thus indicated what is in my thought, one of the means of reform in the handling and marketing of wool. I do not design in this paper to even by indirection, countenance the careless or dishonest handling of wool, because the buyer is reckless and indiscriminating. I believe every man should be honest for honesty's sake and honesty always wins at the end of the race if not sooner.

Of course if the buyer and seller were alike honest, the reform would be accomplished at once. But we are yet too far from the millennium to expect reform from that source, and in the meantime the present premium on dishonesty should be taken away and some system devised by which wool can be marketed on its merits.

I have indicated three steps toward such a system, viz.: Selling unwashed, selling on merit and to buyers competent to decide merit.

President Levering: The next exercise is the paper by Mr. Edward Bethel, of Muskingum county.

Mr. Edward Bethel then read the following paper on the same subject:

MR. PRESIDENT AND GENTLEMEN OF THE AGRICULTURAL CONVENTION: If all our Ohio wool growers could be brought up to realize the importance and profit of properly preparing and packing the annual products of their flocks for the market, the return

an reputation and prices would soon satisfy them that it is the common interest of every one of them to comply with the requirements of the wool trade in this particular. Neglect or failure to do so inevitably reduces the standing and quotations of their products.

The question, which kind or breed of sheep is the most profitable, will be decided by individual judgment and experience. It has been well said that sheep husbandry can not be carried on solely for wool. My own opinion is in agreement with the conclusion of many others, that mutton sheep which produce medium wool are preferable in this section of the country, and that the future hereabouts will tend largely towards their general raising. Where, however, the situation for keeping Merinos is exceptionally inviting and favorable, that popular breed is likely to hold its own. Among the first Merinos in the United States were a pair imported from France to my county (Muskingum), by Mr. Seth Adams. In the first year of this century, and from this stock, a large proportion of the present Merinos in the whole country have descended. They have proved a highly desirable and valuable acquisition for the purpose of wool growing chiefly. But, nevertheless, mutton sheep possess certain staple advantages which render them a comparatively safe investment on common Ohio farms. The latter have long, open wool, almost free from grease, which can easily be put up in good condition. In fact, this class of wool, without washing, will in most cases shrink less than a large proportion of washed Merino wool.

The question, also, whether washing wool on the sheep's back is advisable, I do not propose to discuss. It was evidently the intention to confine these papers to the consideration of the reform needed in putting up washed wool, as this is the condition in which most of our product is sent to market. At least, if we continue washing it while on the animal's back, right here is where the reform wants to be commenced. Better leave it unwashed than continue washing in the manner now prevailing. Taking for granted that fine wool sheep predominate (as they do in the vicinity in which I reside, and where I have been a local wool buyer for some thirty years), as there is a wide difference between various flocks or families of Merinos—some of them being smooth or free from wrinkles, with long, open wool, comparatively free from grease, while others are wrinkly, with dense fleeces, and the wool usually shorter, containing a larger quantity of grease—you will see that it requires much more washing to put the wool of the latter sheep in merchantable condition than the former. I will here state that the average Ohio wool is estimated to shrink in scouring from fifty-two to fifty-six per cent., whereas, some fifteen to twenty years since, this average amounted to only forty-four or forty-five per cent., and the reputation of Ohio wool was then second to none. At that time the superiority of Ohio fleece washed wool was in its high condition. Now, the inferiority of Ohio wool is within the fleeces, being full of poor stuff which should be sold by itself, and not covered up. It has been remarked to me by a firm of large experience, that if some farmer who had gone through the Boston wool houses ten years ago, and seen the lofts full of nice, bright Ohio washed fleeces, should take a trip through those lofts today, he would be amazed at the small number of Ohio piles of wool, and the large number of piles from Oregon, Wyoming, Utah, Montana, Nevada, Arizona, Idaho, Iowa, Kansas and Nebraska. Ten years ago, some houses did not handle any of these wools, and those that did, would have about one-third of their space occupied by territory wools and the balance with fleeces. To-day all of these houses handle territory wools, and only use about one-fourth of their space for washed fleeces. These wools are doing as much to keep down the price of Ohio wool as any other grown. If the Ohio farmer reflects that in years gone by these states were not wool producing states, he must readily detect how much greater the competition is, and how much more it requires to make an article attractive instead of deteriorating it by giving it less care.

The remedy can only be found by a united effort on the part of the wool-growers; and I would recommend that the farmers who live in one township decide how they are going to wash and handle their wool, and that all of their clips should either be put up to a high standard of fleece-washed wool or remain unwashed. Individuals would not get value for a small clip of wool, even if it were put in a very high condition, as the

clips are usually entirely too small and lose their individuality in the common run. But where a quantity is 10,000 pounds or more, and could be secured of one uniform grade, there would be no trouble in getting the intrinsic value as to scoured basis.

Now as to the quality of the wool: It costs no more to grow a good Delaine fleece, which always commands a higher price, than short, stubby X wool, and possibly it is the most neglected of all grades. There is little trouble in selling long grown wool at several cents more than clothing wools, and Delaines can always be utilized for clothing, but clothing wool not for combing. There are some sections in Ohio where very little attention is paid to the proper breeding of Delaine flocks, and consequently their wools also command less money.

When the manufacturer goes into the market he employs an expert grader, at a big salary, to inspect the wools he proposes to purchase. This grader sorts the wool, and if the wool merchant and the manufacturer disagree as to condition, a test is made by ordering a few bags and sending to the scouring mill to ascertain the shrinkage, which determines the result. It appears that by this process our Ohio wools, once so favorably known, have lost much of their good repute—it having been found that Australian unwashed wool actually loses less in cleansing than Ohio washed wool in general. An improvement in the manner of preparing wool for market will do more to induce eastern dealers to buy than any thing else.

The low condition of a clip of wool is usually due to neglect and unskillful handling, it being impossible to raise well grown, strong wool on neglected, half-starved sheep. In some cases it is due to dishonesty, the washing being of the slightest order—not such as to cleanse the wool of impurities, but merely to pass it off on the buyer, as washed. In other cases a bad condition is caused by allowing the wool to become burry on the sheep's back. An otherwise first-class Delaine fleece may be spoiled by burs, there being no machinery that will wholly remove the bur particles which remain to spoil the goods, and it is impossible to color light fabrics made of such wool without the specks continuing to appear. Consequently such tainted wool can be used for only low priced goods. Allowing sheep to run under hay racks or through burry sections of a farm is a great error of judgment on the part of the producer, for it not only fills the wool full of burr, chaff and hayseed, but it injures it as a salable product.

Another very general fault is that of allowing flocks after washing to run for such a length of time before shearing that they virtually become unwashed.

Mr. President, without making it part of my address, but outside of it, I propose reading an affidavit of a rather extreme case, which, verified under oath, may amuse you somewhat, as it amused me:

STATE OF NEW JERSEY, } ss.
PASSAIC COUNTY, }

Before me, James Inglis, one of the judges of the court of common pleas, in and for said county, personally appeared George McClure, and being duly sworn, on his oath doth declare and say that on or about the fourth day of April, A. D. 1891, that while assorting a bag of wool No. 90, marked "A. H. P.," he found packed in said bag, about the center of said bag, a log of wood weighing sixteen pounds. Said George McClure further states that he is employed by Hoppin & Henry, wool scourers, and said wood was found while in their employ.

GEORGE MCCLURE.

Sworn and subscribed before me this eighth day of April, A. D., 1891.

JAMES INGLIS, JR.,

Judge of Court of Common Pleas.

This is certainly far beyond the common run of wool stuffing, of which there should be no instances at all, both for the sake of the wool growers and dealers.

The grand requisite in having good wool is to have good sheep. In the first place breed for good wool and good shearers, then at shearing time, when you find a sheep whose fleece does not suit you, throw it out and fatten it for the market. Keep your sheep in

good condition throughout the entire year, that the wool may make a good even growth, thereby increasing both the amount and quality of the fleece.

In tying up, the fleece should be placed on a table, inside fleece down, and after straightening out and arranging, the sides turned in and then rolled up, commencing at the tail end and rolling up leaving the shoulder of the fleece outside, then tie up with smooth hemp twine crossing twice in each direction and only tight enough to hold. Never use sisal, commonly known as binder twine, which can not be removed without leaving some of the fibre in the wool, which is consequently bound to get worked into the yarn, where it can not be colored. Ten feet of this twine is sufficient to tie any fleece. In putting up wool, tags, pulled wool, and all foreign substances should be strictly kept out. The tags, etc., should be sold separately for what they will bring. Marking sheep with tar or paint should be avoided. Wool has a greater intrinsic value if free from paint and tar, as well as all other impurities.

Now, when we put up our wool in strict condition, we are able to determine what it should sell for just as readily as we can determine what fat hogs or any other staple article should be worth in the market. On the other hand, when put up in poor condition, poorly washed, stuffed, or defective from any other cause, and put on the market, the dealer to whom it is consigned can sell it for any price he chooses to, and we have no redress. He gives as a reason for the low price obtained the fact that the wool was unmerchantable, and had to be sold at a heavy discount. The shipper is compelled to admit that it was not entirely merchantable, and he has to submit to the consequent loss. But were the wool in strict condition, the consignee could not take such advantage, because the shipper could then prove that the wool was in good order, and that he was entitled to receive the price or prices current at the date of sale.

Mr. F. C. Stanley, of Edison, Morrow county, Ohio, was then called upon for his paper.

Mr. Stanley: In reading to you the few hastily prepared notes I have upon this subject, you will understand that I am a Merino sheep breeder, and of course I speak from that standpoint more than any other, and I think when we come to talk about wool growing for the supply of the wool markets of this country, we must talk about the Merino sheep largely.

Mr. Stanley then read to the Institute the following paper:

Wool should be prepared for market with the same care that is required in any other product of the farm. Of course I am not here to speak on the subject of wool growing, but it enters largely into the subject of preparing for the market. We have neglected the quality of our wool in our efforts to increase the quantity, so that we have to be more particular in breeding to select the best fleeces and increase the quantity by the length of staples more than wrinkles, and the density of fibre rather than grease. When we have prepared ourselves in this way to raise wool, we have made a good beginning in the preparation of it for market, and this can be done by careful breeding without loss in quantity. After you have the sheep, they need the proper care, regular feed and continued health to keep them thriving that your wool may be even and no breaks in it. Such wool, if washed on the sheep, should be carefully washed, not in muddy or sanded water, as is too often the case, but in boxes carefully prepared in clean running water, and sheared within ten days or two weeks after. And now comes the real handling of the wool. It has been a practice by many of the farmers of Ohio to put in the fleece tags, dirty locks, pulled wool, pieces of skin, even bones and trimmings of hoofs. No farmer would stand that kind of stuff in his sugar that he buys of his grocer. You could not sell wheat, corn, clover seed, butter, or any other product of the farm adulter-

ated in that or similar way, and expect to get the price of a good article. And it is not strange that manufacturers boycott such clips if they know them, and they have been too common in Ohio. Buyers in the past have been much at fault in not discriminating when they knew the conditions, taking away a large share of the inducement from the farmers they should have had. But wool should be carefully cleaned of all tag locks before tying up, and all spring tags and tag locks and pulled wool put in a lot by themselves and sold for what they are worth, leaving the fleece clean and free from all such foreign matter. In fact, the practice that prevails in some countries, especially in Australia, of skirting the fleece, taking the wool from the belly, legs and all tag locks, leaving the body of the fleece by itself, might be followed by Ohio wool growers with an increased profit in the long run. Business men do not often boycott, but buy their goods where they can get the most value for the money, and patriotism will cut no figure with the manufacturers if they can get more value for the money from the Australian ranch man than they can from the Ohio farmer. Our tariff will help us to compete with their cheap land and perennial pastures, but it will not make wool out of dirt, and I insist that the same care and painstaking to make our wool an article of merit and value is just as necessary as in any other produce.

A Member: I presume it would be proper at this time to go into the election of officers for the ensuing year, and I would like to call the attention of the Institute for that purpose so that if there is any purpose to go into the election of officers, a committee might be appointed on nominations, and that committee might hold its session while the Institute is disposing of other matters.

Mr. Foster: It occurred to me during the sessions of this Institute that we ought to provide for a vice-president. The President of this Association may be a member of some of the breeding associations, and he might want to attend their meetings, so that if we had a vice-president he could preside in his stead. Therefore I would like to make a motion that when this committee on nominations is selected we provide for a vice-president. Mr. Bonham, of course, remains Secretary. I will offer that as a motion, if I can get a second, that in the election of officers this year we provide for both a president and vice-president.

The motion was seconded and carried.

Mr. Foster: I would make a motion that the Chair appoint a committee of three to nominate officers, and then after the discussion of these questions is concluded, we will elect them this evening. Seconded. Carried.

President Levering: Let that committee consist of Mr. Foster, Mr. Todd and Mr. Cowden.

The Committee on Nominations then retired to formulate their report.

Judge Lawrence: Mr. Chairman, I desire to offer the following resolution:

Resolved, That a committee of three be appointed to examine and report what services are being rendered by the Ohio State University in aid of stock breeding and wool growing in Ohio;

Also, to report the reasons for changing the original name of the Ohio Agricultural and Mechanical College to that by which it is now known;

Also, to report on the reasons for appropriating the buildings in part of the University for the use of a law school, and the utility of so doing.

Said committee to report to the next meeting of the Institute.

I will state that some years ago Congress gave a certain amount of lands to establish an agricultural and mechanical college in Ohio. It was established, and after a while its name was changed by the Legislature at the instance, as I understand, of some parties who were interested, so that it has ceased to bear the name of the Ohio Agricultural and Mechanical College. The buildings erected in part with the money given by Congress or lands given by Congress, a strip of which was sold, are now, as I understand, used in part in making young lawyers, a commodity that is somewhat essential, but I don't suppose it is necessary that they should be hatched in an agricultural and mechanical college. I have no doubt but it is a valuable institution, and I don't wish to be understood as undervaluing it. I don't see that the professors, gentlemen who are managing the institution, have particularly troubled these meetings with their presence. I don't think any of them were at the wool-growers' meeting last evening. I think one of them has been at some of the meetings here, but their presence would have been doubtless very agreeable to all the farmers. I think it is well that this thing should be looked into. Doubtless it is being done all right, but it is well for the farmers to look into things and see that they are well done. [Applause.]

The resolution above offered was then seconded and adopted.

Professor Hunt then came forward to the platform and said:

At this point I would like to say a word. I simply wish to invite the committee, when it is appointed, to come up to the University and see us. I didn't wish to say any thing about it until it had been decided upon to appoint the committee; and now that the resolution has passed, I simply wish to extend a cordial invitation to that committee to visit the University before it reports to the Institute again, and I shall be glad personally to meet with the committee and go with them at any time and show them what is being done, and I can assure them of the hearty interest that the President and faculty of the institution will take in showing them about. Coming as I just have to the institution within the last few days, of course it would be eminently improper for me to discuss at this time, before this body, any of the questions that the committee have in view; but I say to the committee that I, for one, shall do every thing in my power to show them what we have, what we are trying to do, and from that they may decide.

Judge Lawrence: I take it for granted that it will be necessary for

that committee to call upon the professors of the Institution especially as they have not called very much on this Convention.

President Levering: I will name on that committee, Judge Lawrence, Mr. Green, and Mr. Rector.

President Levering: Is the Committee on Nominations ready to report?

Mr. Green: I will ask to be excused from that committee, if you please. I am not so situated as to be able to look after this matter, and living in a remote part of the State, I will have to ask to be excused.

President Levering: As Mr. Green desires to be excused, I will name Mr. Cowden in his place.

The Committee on Nominations then submitted the following report:

Your Committee on Nominations beg leave to make the following report:

President: Mr. Newton Rector, Kinderhook, Pickaway county, Ohio.

Vice President: Mr. W. S. Foster, Urbana, Ohio.

Secretary: Mr. Bonham.

The report was then adopted by the Institute.

Mr. Bonham: Before the Association adjourns to-night, I would like to say a word. As you have elected me Secretary of this organization, I ask the co-operation of every gentleman present, and of every breeder in the State. I have found in the last two or three years in trying to keep this organization in a prosperous condition, that it requires an immense amount of correspondence, and of urging and of entreaty to get men to come here to take part. I have this favor to ask of the gentlemen present, that if any of you know any man in your association who could furnish us a paper of credit to your association, that you send me his name. If you know of a man who is willing to do that send me his name and post-office address, what his tastes are, and what kind of a paper he would prefer getting up. The tendency is to recommend men who represent some peculiar breed, but it seems to me that we have passed out of that stage of our education. We want to stop all such special pleading. We want to get at some special work, or discuss some feature of cattle breeding or other subject that is applicable not only to the Jerseys or the Shorthorns but to all breeds alike. We want to leave these narrow fields and take a deeper and broader view, and I hope that this organization will adopt that plan. There are practical questions that can be discussed here that are of interest and profit to all. For instance, the question which was before the Institute to-night on the subject: "Reforms needed in the wool industry." Those papers upon that subject were of practical value to all. Why? Because they are special papers upon a practical subject. They are not all over the field of sheep hus-

bandry from the time of "Abel" on down. We want to take practical questions of this kind and discuss them for they will be of practical utility to all.

I ask your co-operation in this work. If you know a man who can discuss some practical subject which will be of interest to all, send me his name. I have picked over the field for two or three years for men that I have known would be able to prepare and furnish papers, and I would be glad if you will within the next ten days, send me the names of those you may know, so that I can file them away and refer to them when I come to make up our program for next year. Unless we can get such co-operation, we find it very hard to get up an interesting program which will last two or three days.

I have another suggestion to make, and that is, next year we want to try to get one or two men of ability to discuss some feature of our cattle, or horses, or sheep, or swine, industries from abroad. Some man that has some special reputation. If any man occurs to you whom you think would do us good, send me his name and I will correspond with him and see what can be done in that regard. Our object is to bring before these meetings questions of practical interest, and we must all do what we can to see that the interest in these meetings does not decline. I am sorry that this hall is not crowded. These papers however will reach a larger audience than this. They will be published in our bulletin and in our annual report and will be read by tens of thousands of readers. Our reports are not only called for by the farmers of the State, but we find men of other professions calling for them. We find an increased demand, and all over this country the farmers are asking for the Ohio Agricultural reports. A short time ago, I had a request to send some reports to India; they had heard of them there. So we are really sowing seed and we are doing work that will live after us, and I hope that the farmers and breeders that attend here will work up a little in this matter. When depression is on us, then is the time for greater energy and pluck, so that we may pull through and win in the end. I thank you for your kind attention. [Applause.]

Mr. Cowden: Before adjourning, I move that the thanks of this association be tendered to its officers for the kind and efficient manner in which they have presided over us.

Mr. Cowden then put the motion to the house and the same was unanimously carried.

Upon motion, the Institute then adjourned *sine die*.

PROCEEDINGS
OF THE
Short Horn Breeders' Convention,
WHICH CONVENED IN THE
CITY HALL, COLUMBUS, OHIO,

AT 7.35 P. M., JANUARY 12.

Mr. Baker was called to the Chair and said:

Gentlemen, this is unexpected. I left home at eight o'clock this morning and I did not get here until after six. I didn't feel very well, but wanted to meet my friends and I thought I could stand it if they could. I am very sorry that the Short Horn Breeders' Association has run down so low. We started off some fifteen years ago with a good attendance and we had another fall meeting that was fairly well attended. The annual meeting up to four or five years ago succeeded pretty well.

I believe in these meetings, and I believe in a good, healthy Short Horn Breeders' Association, but it seems that the short horn breeders of Ohio can not spend a half day for such purpose. For three years the meetings have been held only in the evenings. Last year there was the smallest gathering I have ever seen. Now, there are some good names on the program to-night and I hope we will have an interesting meeting after all.

The treasurers' report was read. On motion, the report was accepted and placed on file.

Mr. Foster: If you will allow me, I want to name the following gentlemen as a committee, Messrs. Hagerman, Montgomery and McClelland, and I would offer a resolution that the committee meet and draw up suitable resolutions on the death of Mr. Crane, and that a copy of the same be sent to the family and spread on the minutes. Upon motion, the resolution was adopted. The following paper was then presented according to program:

STOCK FEEDING.

BY PROF. HUNT, OF THE STATE UNIVERSITY.

The art of stock feeding consists in the judicious use of available foods with animals capable of making the most out of the food consumed. I shall assume that we are agreed that in regard to the animal fed, the best is none too good; that for success in stock feeding, good animals as well as good food is essential. This much assumed I shall proceed at once to a consideration of the corn-crib cross.

To make the most of this noble sire we need to know a few simple and fundamental facts. The most important of these to my mind is the answer to the following question: Upon what does the value of a food depend? The value of a food depends upon three qualities, which should be kept in mind of every stock-feeder who wishes to make the most out of the food used, and I may say here in passing that the value of a food to the human family depends on exactly the same qualities as the food fed to horses, cattle, swine or other animals. I should be pleased, therefore, if I am able to interest the ladies present.

The three things upon which the value of a food depends are its composition, its digestibility and its palatability. Its composition determines the character of the food, its digestibility, the proportion in which the different ingredients of the food is used, and its palatability determines the readiness with which an animal will eat a given food or ration.

Every vegetable substance can be divided into several food elements or nutrients which are very much the same in all foods, although occurring in different proportions. By the composition of a food is meant the proportion in which these several food elements or nutrients occur in the food under consideration. The difference between a kernel of corn and the corn-stalk or a kernel of wheat and wheat straw is not that they contain different ingredients, but that they contain the same ingredients, or nutrients, as I will call them in different proportions. These nutrients, whether they occur in grain, or hay, or straw, or stalks, or even in wood have a value in very much the proportion in which a given animal is capable of digesting them from the substances in which they occur. A knowledge of the composition of substances which may be used as foods becomes, therefore, important, if not essential, to a rational use of them.

In the first place, then, all vegetable substances which we use as stock foods contain some water. Pasture grass and potatoes contain about three-fourths their weight of water; pumpkin, nine-tenths; apples, five-sixths; while grains contain from one-tenth to one-eighth their weight of water.

Though a plentiful supply of pure water is of prime importance—about one-half the animal body is water—it may be obtained at the watering trough or creek, and is, therefore, not considered a valuable ingredient of a food. In estimating the value of a food, however, we need to know the proportion of water in order to know how much dry food we have left. The proportion of water in different foods makes more difference than is usually supposed. For example, at the Experiment Station we are feeding eight yearling heifers ensilage and corn fodder in comparison, all the circumstances being the same except one case the corn was cut and shocked and in the other it was put into the silo. The corn fodder, as it was hauled from the field, contained about forty per cent. or two-fifths its weight of water, and the ensilage, as it came from the silo, seventy-five per cent. or three-fourths its weight of water. As a matter of fact, we have been giving four of these heifer twelve pounds of corn fodder daily. How many pounds of ensilage, then, should we feed to give four other heifers a like quantity of food. Will some one in the audience kindly answer?

We found in 1888 that thirty-two medium-maturing varieties of dent corn when husked about November 1st, contained twenty-three parts of water in every one hundred parts of shelled corn. Thoroughly air dry corn contains about eleven parts of water. One thousand bushels of shelled corn as husked, therefore, would be equal to 885 bushels

when dry. The loss on drying from 1,000 bushels of corn (from the kernel, not from the ear), may be equal to from 100 to 200 bushels.

Sixteen samples of well cured hay timothy when carried to the barn contained twenty-three parts in one hundred of water. When dry it would contain from ten to fifteen parts in one hundred. According to this, a ton of hay would lose about two hundred pounds after being placed in the barn. Eighteen hundred pounds in the winter would be equal to a ton when harvested, or nine dollars a ton in the field would be equal to ten dollars in the winter, not counting cost of handling or waste from other causes. Clover usually contains more water when harvested. As we harvested it, a ton would lose 300 pounds in drying. The Experiment Station filled a silo with about forty-three tons of corn ensilage, twenty-nine tons of it was water. An equal quantity of timothy hay would contain about ten tons of water.

While the water in a substance is not in itself valuable, it may be indirectly so. It may make a substance more palatable and, therefore, more readily eaten, or more easily masticated and, therefore, more digestible. We fed our stock one winter very largely upon corn fodder. A part was stored in the barn in the fall, while a part was hauled directly from the field as fed. The latter was more readily eaten. This, I believe, was on account of its being more moist, which made it both better liked and more easily eaten.

There is another way in which water may be beneficial, which is of special interest to dairy farmers. You all know, or your wife does, that cream is often difficult to churn in winter; that it is difficult to get all the fat out of the cream. Several experiments have been made at experiment stations which seem to show that feeding succulent foods will correct this difficulty. That is to say, that cows fed on succulent foods will not produce any more butter fat, but a larger proportion of the butter fat produced will be recovered by churning than when dry food is given. If this is true, roots or ensilage are desirable for winter feeding of dairy cows.

On the other hand, too much water is harmful. If you produce unnatural thirst by the excessive use of salt, or feed animals a food containing so much water that it has to consume more water than it needs in order to obtain sufficient food, there will be a waste of food.

When vegetable substances are subject to the temperature of boiling water, the water they contain is driven off, and there is left the water-free substance, containing five food elements or nutrients.

Of these, I mention first the mineral matter or ash. This is the material left when plants or animals are burned. The grains contain from one to three parts in 100; hays from five to ten parts in 100. The ash or mineral matter is an essential food element and is most largely needed by the growing animal in building up bone and muscle. Usually the ash, common salt excepted, occurs in larger quantities in all foods than is needed. We need not, therefore, concern ourselves about it in the estimation of the value of a food. Possibly Indian corn is an exception. Indian corn is rather deficient in ash, especially lime, and when fed alone to growing pigs, does not, probably, contain enough ash for their wants. It is probably a good plan to give them a mixture of salt, ashes, coal slack and superphosphate, or any one of the last three substances combined with salt. It is well known that hogs relish these substances.

The second food element or nutrient of the dry substance of our stock foods is fat. Grains contain two to six parts in 100; hay about two parts, and straw about one part in 100. Corn and oats contain more than wheat and rye; sweet corn more than dent or field corn. Linseed meal contains ten to twelve parts, while flaxseed contains thirty-five parts in 100.

Fat may be absorbed into the animal system without material change and stored up as fat, or it may be used in keeping the animal warm or in producing mechanical force. When fed in proper quantity it is worth for this purpose pound for pound more than any other food nutrient.

The third food element is the woody fibre. Grains contain from two to fifteen parts in 100. Oats and beans contain much more than corn and wheat. One-fifth to one-third of hay is woody matter, and one-third to one-half of straw and corn stalks. The wood of oak trees is not an available stock food, but the woody matter of grains, hay, straw, etc., is partially digestible and aids in keeping the body warm or in producing mechanical force, and, probably, may be changed into fat.

The fourth food element which I will mention is the so-called soluble carbohydrates, and are chiefly starch, sugar, etc., and we may therefore call this class of substances starchy matter. Starchy matter is similar in chemical structure to the woody material, but is more soluble and more easily digested. This is the most abundant element of our stock foods. The great value of our grains lies in their containing such a large proportion of it. One-half to three-fourths of our grains and one-fourth to one-half of hay consists of this nutrient. As in the case of the fat and woody matter, starchy matter is of use in keeping the body warm or in producing mechanical force, and, as in case of the woody matter, may be changed into fat. Starch is never stored in the body as starch. It is either burned up in producing heat or force, or changed into fat.

Thus we have three nutrients of foods—fat, woody and starchy matter, which together form eight or nine-tenths of the dry matter of our stalk foods, and whose function or use is the same in all three—the production of heat or force, and in case of a surplus it may be stored up in the body as fat, in which shape it is a reserve force. These three nutrients are, therefore, called heat producers. Although such a large and important part of stock foods, any animal fed on these substances (including also ash and water) would die in a comparatively short time. Important as they are, they are, alone, unable to support life. No muscle or flesh can be formed from them. In order to support life and produce muscle some other nutrient is needed.

Most of you, doubtless, have at some time in your life indulged in the somewhat childish trick of chewing wheat, and are familiar with the gummy substance that is formed by the operation. This substance—which in wheat is called gluten and which occurs in all plants in some form—is similar in its character to the flesh of animals, and when digested by an animal is capable of producing flesh or muscle. The white of an egg is another illustration of this class of nutrient. The white of an egg is called albumen, and as this class of nutrients resembles in character the white of an egg, they are called albuminoids. One-tenth to one-eighth of the grains, one-sixth to one-fourth of beans, peas and flaxseed are albuminoids. Bran contains more than wheat, wheat more than corn, sweet corn more than field corn, clover hay more than timothy, pasture more than either; while straw and corn stalks contain a small proportion.

Albuminoids are the only class of nutrients which can produce flesh or muscle in animals, and are, therefore, called muscle formers. They can, also, perform all the functions of fat, woody or starchy matter. With sufficient water and ash and albuminoids, it would be possible for an animal to live. A dog could live on lean meat but would die if fed on fat exclusively.

There is, however, within certain limits a best proportion in which to feed the heat producing and the muscle formers. It happens, as already shown, that the heat producers are many more times abundant than muscle formers, that foods which contain a large proportion of the muscle formers are more expensive than those which contain a large proportion of heat producers. Wheat bran, for example, is more expensive than shelled corn. It should be the feeder's object to feed these nutrients in the proportion that shall give the largest return for the least outlay. It is folly to use gold when brass will do better. It is folly to give a larger proportion of expensive muscle formers than is needed when cheap carbohydrates are more useful. It is obvious that the growing animal requires more albuminoids than the mature fattening animal. Milch cows also require a larger proportion of the albuminoids than the fattening animal, because the milk contains a larger proportion of albuminoids than the increase of fattening animals, while mature working animals require a less proportion of albuminoids, as work or

mechanical force, as we have already learned, is produced by the heat formers, very much as force in steam engines is produced by fuel.

The best proportion in which to feed the heat and muscle producers to the various classes of stock has been the subject of considerable study by German investigators. In general, young, growing animals and milch cows require about twice as large a proportion of albuminoids as mature fattening or working animals.

So much for the character of foods. With a limited number of stock foods such as a farmer in this section has at hand, what is to be done? Of what use can he make this knowledge of the character of stock foods and of their relation to animal nutrition? In the first place, the farmer in northern Illinois is fortunate in being able to produce during the summer an abundance of a substance which is unsurpassed as a food for growing animals and milch cows. This substance is grass. The young growing grasses and clovers contain a large proportion of highly digestible muscle forming nutrients. Abundance of fine pastures and fine cattle have gone, as it were, hand in hand the world over. In the winter time, however, the farmer is largely restricted to hay, which is usually timothy, and to Indian corn, both of which are poor muscle producers, though excellent for the production of heat or fat. There is no grain grown in this State that will so economically produce fat in a reasonably mature animal as Indian corn, but for growing animals and milch cows some food containing more albuminoids should be added to the ration. This may be done by feeding a good quality of clover hay in place of timothy, and feeding some bran or shorts, or even oats, in place of a portion of the corn.

A farmer may do much by adapting himself to circumstances—a characteristic in which the American farmer excels all others. The farmer may so breed as to get the largest growth on his stock in the summer time when he has an abundance of easily digestible muscle forming foods. Pigs dropped in the spring which with their dams have access to grass, get during their growing period the muscle forming foods. Having thus obtained a fair growth, they can be finished in the fall and winter with a liberal supply of corn, for which purpose there is no better food. The distinguished *English Experimenter* once said that the natural food of the civilized hog was barley meal. If he had lived in America, he would have said that the natural food of a civilized hog was Indian corn.

A hog raiser of considerable reputation has asserted that he can raise a thousand pounds of pork from an acre of grass during a season.

During the latter part of the summer of 1888, when our pastures were very dry, we produced in eight weeks at the rate of 210 pounds of pork from an acre of blue grass pasture. This, at the least estimate and under the most unfavorable conditions, would be over 500 pounds a year per acre. Last summer we obtained at the rate of 160 pounds per acre in twelve weeks, or something over 300 pounds per year. In this case, the area of grass was too large for the number of pigs allotted to it. If there had been more pigs on the area, we doubtless would have obtained a better return; so that I think 500 pounds per acre during a season may easily be obtained. These results were obtained in connection with a liberal supply of corn. We found that when pigs had grass only they did not thrive well. We also found that they gave a more profitable return when fed all the corn they would eat from the start.

We fed two lots side by side, each running on an equal amount of pasture, giving the three pigs of one lot all the corn they would eat, and giving those of the other lot during the first eight weeks only half that amount of corn, while during the last four weeks they also had all the corn they would eat. Those given all the corn they would eat, during the whole time, gave over twice the profit from the corn consumed than those of the other lot.

The following table gives the results:

From June 17 to September 9, 1889—12 weeks.

	Gain.	Corn eaten.	Cost of corn.	Value of increase.	Corn per 100 lb. increase.	Cost of corn per 100 lb. increase.
Dry lot.....	151	1,022	\$5 11	\$6 04	677	\$3 38
Pasture, full feed.....	217	1,200	6 00	8 68	553	2 77
Pasture, moderate feed.....	181	792	3 96	5 24	605	3 03

If pigs are dropped in the fall, they need some other food with the corn to produce the required growth.

This may be supplied by milk and shorts. Bran is not desirable for pigs, as it contains too much woody matter.

With cattle, on account of their longer lease of life, the calves should be dropped in the fall and winter, in order to be most rationally fed. While calves are fed milk they do not require an abundance of other muscle forming food—milk containing enough. When given milk, especially if fed by hand, calves will do better if fed dry than if fed green food. Further, when dropped in the fall and early winter, they can be weaned in the spring and are the right age to make the most growth on grass. They may then be wintered cheaply, if desirable, and given another summer's pasture, when if of good stock they will be ready to fatten and sell, either in the fall or spring, as the farmer's circumstances and the markets indicate best. Calves dropped in the spring and summer derive substantially little benefit from the pasture the first season and go into winter quarters at an age when they should have an abundance of easily digestible flesh forming foods, which the farmer of this section is not usually in a position to supply. Of course, this method of handling stock involves several questions of detail not within the scope of this paper, but as regards this one question of supplying economically the proper food for obtaining the best result, it seems to me to be plainly the best.

We now come to the second factor in the estimation of the value of a food, viz., its digestibility. The same food elements or nutrients in different foods are digested in different proportions. What is meant by being digested is simply being dissolved in the juices of the stomach and intestines and absorbed into the animal system. This difference in digestibility of the same nutrient in the several stock foods is largely due to differences in the structure of the food. Fat is wholly digestible, but in a kernel of corn it may pass the animal without being digested, because the woody covering prevents the juices of the stomach and intestines from acting upon it, while if ground into meal we might expect it to be largely digested. For this reason it has been found that the fat, albuminoids and starch of hay and straw is far less digestible than the same substance in grains. We need in order to estimate the value of a food, therefore, to know not only the character of the food, but also to know the capacity of the animal to appropriate the nutrients from the foods given. In other words, we need to know the digestibility of the food. This not only depends upon the character of the food given, but also upon the animal to which it is given. A cow with her four large stomachs, whose medium capacity, according to the highest authority on such subjects is 55 gallons, can digest about one-half the woody matter of timothy hay, while a hog with his small single stomach can digest none practically, though a hog can digest and assimilate a larger proportion of the nutrients of Indian corn than the cow.

The digestibility of many of our stock foods has been determined. Of what prac-

tical use is this knowledge to the stock feeder, for if it is of no use to him, either directly or undirectly, it is valueless. Let us suppose for illustration that I wish to know something of the value of corn stalks as compared to timothy hay. I find upon a little search that there have been fifty-three analyses of timothy hay made in this country. According to these a ton of timothy hay will contain 220 pounds of water, 80 pounds of ash, 120 pounds of albuminoids, 600 pounds of crude fibre, 940 pounds of carbohydrates or starchy matter and forty pounds of fat. I find that there have been made nine analyses of corn stalks, or corn fodder as it is usually called. If my corn stalks are about of average quality, a ton will contain 460 pounds of water, 100 pounds of ash, 110 pounds of albuminoids, 560 pounds of crude fibre, 800 pounds of starchy matter and 30 pounds of fat. While my timothy hay would contain 1,700 pounds of dry substance, my corn fodder would contain 1,440 pounds of dry substance. Thus I learn that except for the different proportions of water the nutrients of the timothy and corn stalks are much the same although they look so different.

I next must learn what use my cattle can make of the two foods. I find that the capacity of cattle to digest timothy hay has been determined in this country in four cases, and of corn stalks in one instance, and I learn from the reports given how many parts in one hundred of each nutrient were digested. From this I learn that if my circumstances are similar to those under which the tests were made, that for every ton of timothy hay eaten 895 pounds would be digested and for every ton of corn fodder eaten 795 pounds would be digested, or only about 50 pounds more in the case of timothy than in that of the corn stalk. A surprisingly small difference is it not? But when I get this far along I stop to consider. Do those scientific fellows mean to tell me that a ton of timothy hay is worth no more than a ton of corn stalks? Well, that may do very well on paper, but, I think, my experience in feeding cattle has taught me that those fellows don't know so much as they think they do. I've fed my cattle corn stalks several winters and most of it was tramped into the mud. But before I condemn those book farmers in toto, I will look a little further and see what were the circumstances under which these foods were fed in the tests made. When timothy is fed substantially all of it is eaten, but I find that in the test made upon the digestibility of corn stalks only three-fourths of the stalks given were eaten. Now I have learned something. I have learned that while the digestibility of timothy hay and corn stalks eaten was not very different, that only three-fourths of the stalks were eaten under the most favorable circumstances. It tells me also that if I throw my stalks on the ground to be tramped into the mud and only about one-fourth of them are eaten, that a ton would be worth less than one-fourth of a ton of timothy; but that if I cut them up in a feed cutter and mix them with some more palatable food, so that three-fourth or more of it is eaten, that a ton of corn stalks will be worth three-fourths of a ton of hay, or, in other words, that good corn fodder compares with timothy hay very much in the proportion in which they are eaten.

This is simply an illustration of the course of reasoning by which any farmer with the information at hand can compare two stock foods. Of course the experiments which have been made can only be taken as guides to the value of a food and are not to be taken as indicating with exactness the results that will be obtained on a given occasion. Even after the digestibility of our stock foods has been determined sufficiently often to be thoroughly reliable, the results can only be average results, and how nearly they will apply to a given case depends on how nearly the conditions are average conditions. And it depends further on the fact that there is another factor in determining the value of a food, viz.: Its palatability.

We can determine the composition and digestibility of foods within certain limits and express the results in figures in such a manner that they may be compared, but the palatability is an unknown term that can not be expressed in figures.

According to the experiments of Sir John Lawes the food value of starch and sugar is the same. He fed two lots of hogs equal quantities of starch and sugar and each lot made the same gain. Yet undoubtedly hay containing a given quantity of sugar would be more valuable as a food than if the sugar was replaced by starch, simply because the

cattle would like it better and therefore eat more of it. Much more depends upon the amount of food an animal eats than might at first be supposed. It takes a given quantity of food to keep an animal at a fixed weight, that is to sustain life, and it is only the quantity digested above that required to sustain life, that is available to be used as increase. The more, therefore, that an animal can digest in a given time the more it can increase. For example, at the University farm, we fed a lot of pigs on shelled corn and another on corn meal, giving each lot all they would eat. For some reason, we found that those fed shelled corn would eat more than those fed corn meal and made a better gain for the amount of food eaten. In the same way, it has been found in general, that hogs fed cooked food would not eat as much as when fed on raw food nor gain as much for the amount of food eaten.

It is on account of this factor, palatability or relish, that a variety of foods is often desirable. Stock, like persons, may become tired of a single food, long continued, and not eat more than is necessary to keep them in normal condition, in which case they cease to be a profit to the feeder.

Undoubtedly this question of liking foods is to some extent a matter of education in cattle as in persons. We found that cattle fed on ensilage the previous season ate it more readily than those which had never eaten it before.

I query whether the usual preference of cattle for hay rather than corn fodder may not be to some extent a matter of education. At any rate it does not follow that because a new food is not at first relished by stock that they may not like it and be benefited by it, any more than it follows that tomatoes and oysters are harmful because people have to learn to eat them.

Allow me in conclusion to briefly summarize the main points touched.

The value of a food depends upon its composition, its digestibility and its palatability. All vegetable substances are composed of water of which we need not concern ourselves, except that succulence adds to the palatability of a food, and possibly to the proportion of butter fat which can be recovered from the cream in churning. The ash is usually found in sufficient quantity, salt excepted, and possibly one or two other exceptions. Fat, woody and starchy matter, which comprise eight to nine-tenths of the dry substance of our stock foods, help to maintain the heat of the body and produce mechanical energy, and what is not needed for these purposes is stored as surplus in the form of fat. None of these substances can by any possible means be changed into flesh.

Another class of substances resembling the gluten of wheat occurs in all our stock foods and is capable of being changed into flesh, and, also, of performing all the functions of the heat producers.

There is a better proportion in which to feed the muscle forming and heat producing foods. Growing animals and milch cows require more than the mature working or fattening animals, or those that are simply being wintered.

Different nutrients of foods are digested in different proportions, owing largely to the mechanical condition of the food, and the various classes of animals digest food differently owing to different stomach capacities.

The more a fattening animal eats, other things equal, the better, and this to some extent at least depends upon the palatability of the foods given.

As the value of the nutrients of a food, depends upon their digestibility and palatability to the animal fed, the rational use of stock foods consists in supplying those which contain, in the right proportion the largest quantity of digestible and palatable nutrients at the least cost.

The President: The next subject on the program is "Ohio Short-horns at the Columbian Exposition." Mr. Alban who was to read a paper on the subject is not present. Mr. Black is down to open discussion on the paper.

Mr. Black: I will start the discussion by telling you that I didn't know any thing about it. I came here to hear Mr. Alban, as I understand he consented to come and read us a paper, or make us an address, and I confess that so far as I am concerned, I made no preparation, having been busy with other things. I had the pleasure of being in Chicago a short time ago, and going over the ground. I know that so far as the preparations are concerned, that the Chicago exhibition is going to be a wonderful affair, and I know that ample room and suitable location and every thing that can be asked for will be provided the stock exhibitors there. They are not shut away in a small corner by themselves as they were at the Philadelphia exhibition. Their stables occupy as prominent a position in the ground as is occupied by the other buildings. And as to the importance of Ohio making an exhibit there, every body knows just as much about that as I do. As to what may be done by the Legislature in assisting in this exhibition; as to what money may be provided the live stock owners in making an exhibit there, that is in the future, yet it depends a great deal on the live stock breeders of Ohio; and it is time, high time, if we expect to do any thing and express any interest in that matter, that we are at it and at it in earnest. At the last meeting of the Shorthorn Breeders' Association—I mean the national meeting—they appropriated \$6,000 as duplicating the premiums that the exhibition will offer, and these premiums are large and ample.

As to what we can do, I wish we had an organization, had a full treasury, and could offer some inducements to the breeders of Ohio to make an exhibit there. But that seems to be out of the question. The report of the treasurer has been read. I didn't hear it, but I have heard former reports, and the balance would not help any body very much. But if we expect to keep our cattle before the public, a finer opportunity has never been offered us than is going to be offered in 1893. You know what the Hereford men have done and you know what the Poll Angus men have done in the last few years; how they have brought their cattle before the public; how they have established them here, and you, the Shorthorn breeders, have been sleeping. You may say there is a reason for it, that we are willing to rest upon our laurels, believing all will come out right. But it don't make much difference in this world. It has come to pass that a man that does not get up and hustle will not get there. The exhibits that are made at these exhibitions go a great way toward establishing the national and state reputation of the cattle that are represented there. So that I hope Ohio will make a good exhibition. I hope that our breeders before 1893 will awaken to these important facts, and that we will not be ashamed of the Shorthorns of Ohio, as I feel very confident we will not be ashamed of the Ohio exhibit in general. Let us keep right at it; let us offer all the inducements and all the encouragement that we can.

PAPER ON THE DECLINE OF THE SHORTHORN INTERESTS IN OHIO—
IS IT TO BE PERMANENT, AND IF SO, WHY?

BY JOHN H. MONTGOMERY.

Read by Mr. Wesley Montgomery, who explained that his father, the author, was unable to be present.

The mere assertion that the interest in Shorthorns is declining in Ohio proves no fact. No well-informed judge would give a verdict in favor of a mere assertion; it would be necessary to establish the declaration with positive facts in order for him to give an intelligent decision.

I claim the decline to be a fact, but don't admit it to be permanent.

In order to do this I must bring proof to that effect. This industry, like all others, is governed by the laws of cause and effect.

If the declination in the last few years in Shorthorns was the first that we have any knowledge of we would naturally conclude, as stated in the topic, that it was permanent.

The history of Shorthorns runs back for many years, even for centuries. The first authentic account we have is in the year 1737, in the Studly bull. (It is said that the genealogy of more Shorthorns runs back to this bull than to any other Shorthorn bull.) Tradition carries them back centuries beyond this, as the sculpture of a cow was wrought in a stone and placed in the wall of a magnificent cathedral in Durham, England, in the year 1093. The sculpture of the cow is said by good judges to be an unmistakable Shorthorn.

Now as to the ups and downs in the prices of Shorthorns and the interest that has been taken in them I will confine myself for a short time.

We have but little knowledge of the price earlier than that of Robert and Charles Collings. A noted cow of Charles Collings' purchase was the Stanwick cow, from the estate of the Duke of Northumberland, for which he gave £13, or \$65. Robert Collings and Mr. Waistill bought the bull Hubback of Mr. Fawcett for \$52. Mr. Fawcett had been receiving a shilling, or twenty-two cents per cow for Hubback's service. Charles Collings afterwards bought Hubback of his brother for \$42; also of Mr. Maynard the cow Favorite (or Lady Maynard) and her heifer for \$200; average \$100 each. These sales were made to the Collings brothers in the years 1773 to 1775. These Shorthorns were no shoddys, but on the other hand were of the highest type.

We will now pass over a period of from thirty to forty years and note the sales of the offspring of the above animals and other families with which they had started their herds.

Charles Collings' sale occurred in the year 1810. The number of Shorthorns sold was forty-seven head, averaging \$755 and a fraction. There is no doubt that Charles Collings made improvement on his animals. It was conceded by a company of old breeders in 1812, in discussing the question of the improvement of Shorthorns, that no animal of Mr. Collings' breeding ever equaled Lady Maynard. Robert Collings told Mr. Wiley that his brother's and his own cattle were never better than any body else's until his brother Charles got Maynard's two cows; further, the Stanwick cow that Charles Collings bought for \$65 he said was better than any he ever produced from her. So we see that it was not the improvement that made the difference in the price. This shows that Shorthorns had been to a high state of perfection prior to the Collings brothers.

Note the difference in value of the prices paid for some of the best animals that were the foundation of Colling's herd, average price \$79; average price at the time of Charles Colling's sale, some 26 to 28 years after was \$755. In order to show the reverses in that period as well as in the present, I will take the final sale of Robert Collings (which was in 1820), 46 head averaged \$245, selling for less than one-third of what Charles Collings sold ten years prior; the difference was not in the blood or the excellence of the animals,

but the decline of interest. At the time of Charles Colling's sale in 1810 agricultural products were booming, every thing sold at war prices. At the time of Robert Colling's final sale there was a general peace, agricultural products were very much depressed, hence the cause which produced the effect.

The latter sale being less than one-third of the former in average price. In a few years after the sale of R. Collings of 1820, there was a general revival in business; there were animals bought at that sale and sold for three times the amount paid for them. I might follow these boomings and declinings of interest that have occurred abroad to a much greater extent, but I will let this suffice. I will now come home and note some of the changes in our own country that we are more familiar with. In order that I may not weary your patience I will be as brief as possible and still do partial justice to my topic. As my theme more particularly alludes to the Shorthorn interest of Ohio, I will remain there for a time, yet we are so closely allied to each other that the agricultural interests of our State have more or less to do with the other States.

In the year of 1834 a number of enterprising stock breeders of the Scioto valley being somewhat excited over the importations made by some Kentuckians and the sale of said Shorthorns, induced them to form a company and place Felix Rennick as foreman to go to England to make a purchase of Shorthorns, which he did. He made a careful and wise selection which he was competent of doing, as probably no better man in Ohio could have been selected. He took time visiting the best herds of England and making wise selections from those herds, 19 in number. In 1835 and 1836 two more importations were made by the same association. The first importation landed at Philadelphia and was driven over the mountains. Second and third landed at New York from there to Buffalo by the Erie canal and by lake to Cleveland, then driven to Chillicothe where they were kept until the fall of 1836, when the entire herd, consisting of the previous importations and their produce, were put up at public auction. This was a new thing, probably the first public sale of Shorthorns that had occurred in Ohio, and being the most important and numerous sale of Shorthorns that had ever occurred in America, consequently it drew a large crowd, other States being well represented. The price of agricultural products had been good, meats brought a good price both in our home and foreign market. Money was plenty and farmers felt rich, so this was a propitious time for such a sale, 55 head being the number sold. Several that were offered were not breeders, the lowest price paid for this sort was \$205, and \$2,500 was the highest price. Average \$897 and a fraction.

Other public sales were made between 1836 and 1840; prices began to wane, and from 1840 to 1850 there was a general depression in the finances of the country; cattle and hogs were sold for a mere song. I will here give some of my own experience. I sold dressed hogs in 1849 for \$2 per cwt. net weight. I bought hogs as low as \$1.50 per cwt. live weight. In 1847 and 1848 I bought fat cows, heifers and steers from \$8 to \$15 per head and drove the same to Pittsburg market. In 1850 the Steubenville & Indiana R. R., now B. & O. and P., C. & St. L., was in process of construction. Several hundred hands were at work grading from Newark to Columbus. I made a contract with some of the contractors to furnish them beef at \$8 per barrel; this, understand, includes the whole dressed animal, fore and hind quarters. I bought said cattle which were mostly two and three year old steers, for \$1.25 to \$1.50 per cwt. live weight. With these low prices there was little or no encouragement for breeding Shorthorns; from \$50 to \$100 would buy the choice out of any of the best herds in Ohio. The cause was the low price of meats and live stock. Importation and public as well as private sales were scarcely ever made. This depression continued for 10 or 12 years. In 1852 there began a general revival in agriculture. Meats of all sorts advanced. I sold four large fine grade Shorthorn steers, average weight was 2,600 lbs., for \$6 per cwt. live weight; good grade two year old steers sold for \$4 per cwt. for feeders. This stimulated Shorthorn breeders. Many pedigrees had been lost and cows had been sold for dairy purposes, the butcher had been given a share of them. So that the demand exceeded the supply—the consequence was good paying prices for a time. In 1857 came on the financial crisis of the country; following this we were deluged in the civil war which

grew wild and desperate. This had a depressing effect on Shorthorns for a time. In 1862 I, with my neighbor, C. P. Stark, went to Kentucky visiting several herds, among others Mr. Jerry Duncan's. He offered us eleven very fine heifer calves for \$1,000—among them was 34th and 21st Louan.

After the war had progressed for three years or more laboring men as well as others were wanted by the government to save the country. The army growing very large this made a demand for beef, consequently cattle grew scarce and prices ran high during that period. I sold cattle for \$8 per cwt., live weight. In 1864 I was in New York market with 100 head of fat cattle which sold for \$18 to \$20 per cwt., net. This and even higher prices were paid for cattle. This gave a general boom to Shorthorns. I was at Daniel McMillin's sale of Shorthorns in 1870 where I saw the Louans before mentioned sell. Thirty-fourth Louan sold for some \$1,500; Louan 21st, being a fine show cow, sold for \$3,500; others accordingly. I need hardly mention the extortion of prices of some families of Bates' breeding, held by a few men who had got a corner on them. I will merely mention the dispersing sale of S. S. Campbell, of Utica, N. Y., where one Duchess cow sold for \$35,000. These prices stimulated every cattle man in the country to the breeding of cattle, especially Shorthorns. Our country is almost unlimited in the production of live stock. With this over-production the supply is in excess of the demand. The result in the last few years has been low prices. The result is that many Shorthorn breeders have abandoned the business, thousands of the animals are yearly going to the butcher's block and thousands are losing their pedigrees by not being recorded or by breeding to other breeds of cattle. I lately read a notice in an agricultural paper to this effect: "Twenty-five Shorthorns for \$1,000, or will trade for same number of feeding steers."

Brother Shorthorn breeders, take courage and look up. We have passed the valley of despondency; we are on the other side and ascending the heights. The ascension may not be rapid, but gradual; if so it will be more healthy and lasting. Sudden booms in agricultural products as well as manufactured articles of the country never prove healthy—there is sure to be a sudden reaction.

In the last year beef cattle have made a good advance in all of our markets. In Chicago for the last ten months there has not been a month but what the best cattle sold at from \$5 to \$6 per cwt., live weight; choice even higher. Our meat markets are being opened to nearly all of Europe, which tends to increase the demand, while the supply if any thing is diminishing. The ranch business has seen its best days. The states will have to raise and feed more cattle in order to meet the growing demand. No breed of cattle make better beef than the Shorthorn. I think that none make as good. There has been no better time than the past few years to weed out our herds, get rid of the poor and inferior milkers, and raise the standard of excellence both in milk and symmetrical form. Take courage; cheer up; the long night is past, day is dawning. The decline of Shorthorns is not permanent, so long as the human family eat beef, butter, and drink milk.

Mr. Montgomery: It does not seem to me discouraging to raise cattle at present prices. I prepared at the institute last year a paper showing the value of the feed I had fed to a steer sold at twenty-eight months. It showed that some \$25.00 had been gained on that steer—he weighed 1,780 lbs. at twenty-eight months. I thought it was profitable.

Mr. Hagerty: There was a car load of cattle sold in our vicinity, Shorthorn steers all of them, and they weighed, almost all of them, 1,700. They made money for the breeder, they were the highest and best sale of cattle in our county.

Mr. Foster: Mr. Chairman, I do not think any one throws his

money away in feeding the best Shorthorns. You can take the Breeder's Gazette from the 1st of last September and I do not believe there was a week that cattle sold at less than \$6.00. Mr. ——— got \$7.15 per hundred and the weight is given but I do not remember it. There is no question about that. I think the difficulty is to get cattle of the quality we want. I sent to Chicago and bought fifty-one head de-horned cattle and sent them back there last fall and lost money and I wouldn't accept any more de-horned cattle. The way it was I had an order in six or seven weeks, and I got a letter that they could send me these de-horned cattle, and I came to town and met a gentleman who was formerly from our county and who has a large ranch in Kansas, and I gave him this letter to read, and he says "You send for them." And I telegraphed Cole & Robinson to ship me cattle with or without horns.

Our greatest difficulty is to get good cattle. When I commenced twenty-four years ago I could buy among our neighbors good Shorthorn steers, but we can't get them now. There is money in it if we can get the quality. Men are not satisfied with cattle and are turning their attention to other stock. There are parties out at Chicago buying calves and shipping them, and some that have come from the west. One gentleman bought 400 head. He will feed them as yearlings and parties go there from this state and get that kind of cattle. I made a few experiments with a bunch of twenty-three Shorthorn steers and we don't lose so much by stocking out as we think. De-horned cattle will eat just like a lot of sheep: I have stood there and watched them but they made no gain at all. I commenced giving them some clover hay and they would stand there and eat that hay but they made no gain. Some one suggested that I put horned cattle among them, and they would keep them stirred up. I have told you what I discovered with them and I do not want any more of them.

Mr. Green: I am very much interested in Mr. Foster's remarks. He has sprung a new point in this de-horning business. I have recently adopted the practice with the greater part of my herd and I have been highly pleased with the experiment so far. I think with the reasons he has given for it I will continue. In our section our business is more for breeding purposes and I find that our cattle get along very much nicer in our stables and yards without any horns, and I have been well pleased with the experiment. This is about the first that I have heard in opposition to de-horning against the advantages of it after it was done. Of course there was a great prejudice against the practice but I have never heard any fault with it after it was done—it was a new idea to me.

A Member: Mr. Green, have you sold any calves for breeding purposes?

Mr. Green: Just one bull calf and he gave good satisfaction, but I have a lot of them now. I use chemical de-horning, in fact all of my calves are de-horned with chemical de-horning and I am well pleased with it.

A Member: I have thought about this matter and it has occurred to me there might be some other cause. I de-horned one Hereford calf when it was a few days old and it gets along as well as any of the others as far as I can see. The next year after that I de-horned every thing and I have sold quite a number of them, and so far as I know they have given very good satisfaction. But I am inclined to think that change of climate in these cattle that come from Chicago has as much to do with it as de-horning. In our county it has come to be very common to ship cattle from Chicago and very few of them have made the growth that our native cattle do. I know one man who has shipped in a couple of car loads this fall and like Col. Foster he is very much opposed to de-horning. But I am inclined to think change of climate has more to do with it than de-horning. I see no draw back at all in those I have. Occasionally you will find a man who buys them with horns, but most of my patrons prefer to buy them without the horns.

Mr. Foster: You take my neighborhood, and where they keep four or five and de-horn them, they do pretty well. Mr. Hanna bought sixty head of de-horned cattle; my bunch was fifty-one or fifty-five, and Mr. Macbeth bought eighty; there are 191 of de-horned cattle. Mr. Hanna bought his cattle in February, but I hadn't the ground. He wrote to a party at Pittsburgh, who came out to look at his cattle, I think in October, and he came and tried to get mine, but I wouldn't price them. Mr. Hanna's cattle have been sold since. Mr. Macbeth has got his yet, but some of them are very fat. It was Macbeth that had the experience last year, and he tried again. I wouldn't take a car load of these de-horned cattle unless it was to put them in a barn yard. You couldn't sell them to me at a very much reduced price, if I could buy horned cattle. Those parties there de-horned two or three steers that did very well, but as a whole, they have made no success. Over at Mechanicsburgh one farmer reported to a friend of mine that his cattle had gained but fifteen pounds on an entire summer's grazing; his were de-horned cattle.

Mr. Green: I do not just feel satisfied with the evidence produced against de-horning. I have made a little study of this de-horning business for the last two or three years and gathered all the evidence that I could find for and against it, and every thing that I can gather on the subject where it has been practiced. It has been used extensively in the West for a number of years; it has given satisfaction. I can't help thinking it is something else besides de-horning that has caused these cattle to

be so unthrifty. It has been found to be the case that cattle moved from one section of the country do not give satisfaction. One instance does not prove the point. I think there must be some other reason for it, because I can not see any reason why they would not thrive. It makes cattle quieter, gentler; that is one thing we need to have—to have cattle to thrive. I think that de-horning will not interfere in cattle thriving. I know I have gained a great deal in being able to put them in the stable with so little trouble.

Representative of "Breeder's Gazette": There are only two cases that have come to my attention, and I have paid some little attention to de-horning since its origin in this country. De-horning in the West is the rule rather than the exception. Those two cases are on record, and I presume there are more like them, but it seems to me there must have been something in the disposition of those cattle, or hot weather or something of that kind.

The President: We have been called the Shorthorn Breeders' Association. I think by the opinions expressed this evening, it would be a good time to drop the name and call it the No-horn Association. I never knew a horned animal that could drive one of those if they were of the same age. They would beat the horned animal every time. If de-horning comes into general use, I do not want to have them drop the "shorthorn," as it has a fine sound to me, but if this association takes up the matter, it is a good time now to start and call it the "No horn" Association.

A Member: There is a good deal of prejudice in this matter, and a great many men who ridicule dehorning, but after an experience of two years I am satisfied that a good deal of it is prejudice. If a man has a small herd of cattle he can handle them nicely, otherwise you have a good many things to contend with. I have taken off a few horns as an experiment, and I am satisfied there is a great deal of unreasonable prejudice against the practice.

Mr. Black: I move that Messrs. Green, Montgomery and Foster be made a committee of three to nominate officers for the ensuing year.

The motion was carried and the committee retired.

The committee appointed to nominate officers reported as follows:

For President, Wesley Montgomery.

Vice-President, J. Gernette.

Secretary and Treasurer, George Hagerty.

Directors: Mr. Green, Mr. McClelland, George Hagerty, J. M. Black and William H. Dye.

The report of the committee was received, and the officers as nominated declared to be elected.

Upon motion the Convention adjourned *sine die*.

OHIO STATE FAIR, 1891.

Bulletin of Entries, Awards and Special Reports.

Each succeeding year Ohio is more fully demonstrating to the world that she has the State Fair and Industrial Exposition that is lengths ahead in the race with all others. The sole aim of the Exposition is to benefit the people by encouraging and promoting Ohio's diversified farm and manufacturing industries. With this high purpose in view, it is the constant study of the State Board to make every department and feature of the annual fairs strictly of an educational character, and the extent to which the Board has succeeded in doing this was most amply illustrated in every department of the fair and exposition of 1891. There was not an exhibit or display that was not worthy of a place, or that did not tend to illustrate progress and improvement.

The estimation placed upon Ohio's fair by those well informed on fair and exposition matters is frankly stated in the following from the Ohio Farmer, of September 26, an agricultural journal whose proprietors or representatives visit every important fair and exposition in the States, hence are thoroughly competent to judge of such affairs.

"The Forty-First Annual Ohio State Fair, held last week, goes upon record as one of the most successful in its history. A finer, grander exhibition of the products of human industry never was held in Ohio, and the people turned out to see it in such numbers as to make the board and officials happy. Tuesday was rainy and attendance small, but Wednesday, Thursday and Friday amply make up for it. The attendance on Thursday was fully 45,000, and on Friday it was fully half that number. The grounds were in splendid condition. They are growing more beautiful every year, with the growth of trees and shrubbery and the additional improvements annually made. The wisdom of the Board in purchasing these grounds is now plainly manifest."

"We present a report of the live-stock exhibit in another place. It was a splendid show take it altogether. With the exception of the beef breeds and swine, it was fully up to the average of this fair. The committees, this year, were prompt in their work and the awards were mostly placed early enough to give the successful ones a chance to exhibit their trophies. Horticulture and Farm Product hall never had such a fine display of fruits, vegetables, grains, flowers, etc., as this year, and N. Ohmer, the attending member, with superintendents Longnecker and Derthick were happy and amiable. We shall have a complete report of these departments next week. The Ohio Experiment Station's exhibit in this hall was unusually instructive and interesting. Their "trans-

planted" onions clearly demonstrated the profit of growing onions in this manner. The advantages of spraying to prevent scab on apples, pears, and anthracnose on the raspberry, were also practically shown by specimens sprayed and unsprayed, side by side. The station has been making extensive tests in spraying the past season, and has reached some results that will be soon made known through *The Farmer*, and the regular bulletins."

"The agricultural implement and machinery department was ahead of all former years, perhaps, in the number and variety of articles, notwithstanding the absence of five leading harvest machinery firms, that decided not to exhibit at any fairs this year and hereafter. Secretary Bonham informed us that last year there were 48 car-loads of machinery and implements delivered on the grounds, and this year 49 loads, besides half as much more delivered by the transportation companies. There is no danger of this department of the fair ever lacking in interest."

"The fact that Ohio is a great agricultural and manufacturing state, and that it is making rapid progress in material development every year, is amply demonstrated at these succeeding expositions. With such a grand commonwealth behind it, and with such beautiful, extensive, convenient, well-equipped grounds, the state fair under good management can not help being one of the best expositions of art and industry in the wide world. Most of the old, objectionable features have been removed. There are no shows, games, hawkers, and fakirs, filling the air with hideous shouts and yells, teaching the young immoral practices, robbing the visitors of honestly-earned money, and drawing attention from legitimate exhibits."

During the fair the different departments were in charge of members and officers of the Board as follows:

A. J. CLARK, Cambridge, Ohio.....	Horses.
GEO. LEWIS, Van Wert, Ohio.....	Cattle.
J. W. POLLOCK, Cedarville, Ohio.....	Sheep.
L. G. ELY, East Unity, Ohio.....	Swine and Poultry.
W. W. MILLER, Castalia, Ohio.....	Machinery and Agricultural Implements.
E. L. HINMAN, Columbus, Ohio.....	Manufacturers and Merchandise.
N. OHMER, Dayton, Ohio.....	Farm and Horticultural Products.
J. C. BOWER, Athens, Ohio.....	Woman's Work and Fine Arts.
J. M. BLACK, <i>President</i>	General Headquarters.
A. H. KLING, <i>Treasurer</i>	Tickets and Admissions.
L. N. BONHAM, <i>Secretary</i>	Executive.
J. W. FLEMING, <i>Assistant Secretary</i>	Executive.

The Board feel greatly encouraged by the liberal support of Ohio citizens, and all its efforts will continue to be directed in the lines of progress and improvement that the Ohio Fair and Industrial Exposition may occupy the highest rank as a great school of object lessons and its influences for good felt among all classes.

ENTRIES AND AWARDS IN LIVE STOCK DEPARTMENTS.

HORSES—THOROUGHBREDS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 4 years old and over.</i>			
Charles Slagle, West Jefferson, O	Clipsie	First	\$30 00
A. T. Wright, Logan, O	Lord Colton	Second	15 00
<i>Stallions 2 years old and under 3.</i>			
John W. Russell, Columbus O	Lord Russell	First	15 00
<i>Mares 4 years old and over.</i>			
Chas. Slagle, West Jefferson, O	Maggie Shields	Second	10 00
Jno. W. Russell, Columbus, O	Georgia H	First	20 00
same	Kansas		
<i>Mares 3 years old and under 4.</i>			
Jno. W. Russell, Columbus, O	Miss St. Patrick	First	20 00
same	Full Moon	Second	10 00
<i>Filly 1 year old and under 2.</i>			
Jno. W. Russell, Columbus, O	Miss Russell	First	10 00
<i>Brood mare with foal at side.</i>			
Chas. Slagle, West Jefferson, O	Maggie Shields	First	25 00

L. B. Sprague, South Charleston, O., *Expert Judge.*

ROADSTERS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 4 years old and over.</i>			
D. Hickman & Son, Reynoldsburg, O	Bood Walnut		
Chas. Mooney, Columbus, O	Tom Rogers, Jr		
Albert A. Yost, Thornville, O	Forward		
Thomas German, Hilliard, O	Bill		
Bishop Bros., Jerome, O	Jack		
A. T. Wright, Logan, O	Mambrino Hurrah		
Bay Bros., Cumberland, O		Second	15 00
C. V. Mason, Waynesville, O	Claimant	First	80 00
A. T. Tallman, Prospect, O	Fo Balch		
N. O. Barnes, London, O			
L. S. Braddock, Mt. Vernon, O	Stallion		
Chas. E. Tuller, Dublin, O	Silver Cloud		
<i>Stallions 3 years old and under 4.</i>			
D. Hickman & Son, Reynoldsburg, O	Truro Wilkes	First	20 00
F. L. Postle, Camp Chase, O	Nyle		
Edward Price, Reynoldsburg, O	Tinker		
D. & T. E. Evans, Pataaskala, O	Acma	Second	10 00
Jones & Clover, Jeffersonville, O	Vernious		
J. A. Weinland, Westerville, O	Happy Ben Harrison		

HORSES—ROADSTERS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 2 years old and under 3.</i>			
John W. Russell, Columbus, O	B. B. Wilkes .....	.....	.....
T. D. Postle, Alton, O	Major Wilkes .....	.....	.....
J. M. Welch, Pleasant Corners, O	Jim .....	.....	.....
James Alexander, Columbus, O	Wales .....	.....	.....
Dr. A. F. Emminger, Columbus, O	Hamiltonian King .....	.....	.....
O. P. Chaney, Canal Winchester, O	Patent Right	Second	\$3 00
J. N. Townsley, Jamestown, O	O. I. See	First	15 00
Jonathan Hay, St. Paul, O .....	.....	.....	.....
<i>Stallions 1 year old and under 2.</i>			
Wm. Wagner, Plain City, O	Tony Bill .....	.....	.....
A. McCamie, West Jefferson, O	Sorrel .....	.....	.....
E. Shockley & Son, Circleville, O	Roy Randall .....	.....	.....
Fred Kile, Plain City, O	Dr. Hunter	Second	5 00
W. H. Lightner, Dayton, O .....	.....	.....	.....
A. R. Miller, Pataskala, O	Bay	First	10 00
A. McCamie, West Jefferson, O .....	.....	.....	.....
<i>Mares 4 years old and over.</i>			
Thos. Evans, Newark, O	Flora	First	20 00
Jas. Alexander, Columbus, O	Queen .....	.....	.....
Bishop Bros., Jerome, O	Amazon	Second	10 00
L. S. Braddock, Mt. Vernon, O .....	.....	.....	.....
Jonathan Hay, St. Paul, O	Grace Delna .....	.....	.....
<i>Mares 3 years old and under 4.</i>			
Ed. Hall, Columbus, O	Myrtie Peako	First	20 00
<i>Mares 2 years old and under 3.</i>			
D. Hickman & Son, Reynoldsburg, O	Sallie H .....	.....	.....
B. F. Farrell, Reynoldsburg, O	Minnie Brooks	Second	8 00
Caleb Eubanks, Dublin, O	Pet .....	.....	.....
A. B. Shafer, Sunbury, O .....	.....	.....	.....
Chas. Schwenker, Jr., Columbus, O	Tolu Wilkes .....	.....	.....
L. S. Braddock, Mt. Vernon, O .....	.....	.....	.....
James Comstock, Sunbury, O	Killbuck Rose .....	.....	.....
A. R. Miller, Pataskala, O .....	.....	First	15 00
<i>Fillies 1 year old and under 2.</i>			
D. Hickman & Son, Reynoldsburg, O	Walnut Blossom	First	10 00
Dennis Kelly, Columbus, O	Mollie K .....	.....	.....
John Callender, Columbus, O	Maggie C .....	.....	.....
Jonathan Hay, St. Paul, O	Lena M .....	.....	.....
James Comstock, Sunbury, O	Bellra .....	.....	.....
A. R. Miller, Pataskala, O .....	.....	Second	2 00
O. P. Chaney, Canal Winchester, O .....	.....	.....	.....
<i>Brood mares with their foal at side.</i>			
J. S. Wolf, Reynoldsburg, O .....	.....	First	25 00
E. R. Armstead, Dublin, O	Fleet	Second	15 00
T. S. Van Schoyok, Ellipton, O	Daisy .....	.....	.....
D. R. Kinsell, Columbus, O	Lizzie Buchanan .....	.....	.....
A. R. Miller, Pataskala, O .....	.....	.....	.....

HORSES—COACH HORSES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 4 years old and over.</i>			
L. D. Converse, Plain City, O.....	Young Lexington	First	\$30 00
McLaughlin Bros., Columbus, O.....	Dick	Second	15 00
same	Escobas	First	20 00
J. M. Chambers, Avenue, O.....	Johnny Smuggler.....	Second	15 00
Otho Curl & Co., Cardington, O.....	Sir William	First	20 00
J. H. Whims, Columbus, O.....	Prince Albert.....	Second	15 00
Geo. E. McKaig, Troy, O.....			
Norman Gay, Columbus, O.....			
<i>Stallions 3 years old and under 4.</i>			
Bell Bros., Wooster, O.....	Skylark O. Boy.....	First	20 00
same	R. City	Second	10 00
same	Solomon	First	20 00
same	Craft	Second	10 00
McLaughlin Bros., Columbus, O.....			
same			
same			
same			
Geo. E. McKaig, Troy, O.....	Master Frederick	First	20 00
same	Sinclair	Second	15 00
J. W. Townsley, Jamestown, O.....	Uncas	First	20 00
<i>Stallions 2 years old and under 3.</i>			
Bell Bros., Wooster, O.....	J. Landessohn	First	20 00
same	Champion	Second	15 00
Otho Curl & Co., Cardington, O.....	Daudy	First	20 00
Geo. E. McKaig, Troy, O.....	Belmont	Second	15 00
same	Royalty	First	20 00
L. S. Braddock, Mt. Vernon, O.....	Ledger	Second	15 00
John N. Miles, Sunbury, O.....			
<i>Stallions 1 year old and under 2.</i>			
Norman Gay, Columbus, O.....	Prince Albert No. 1.....	First	10 00
F. L. Postle, Camp Chase, O.....	Smuggler	Second	5 00
Wm. Eckle, Briggsdale, O.....			
<i>Mares 2 years old and under 3.</i>			
E. Courtright, Columbus, O.....	Frances Folsom	First	20 00
F. L. Postle, Camp Chase, O.....	May Day	Second	15 00
Otho Curl & Co., Cardington, O.....	Kitty	First	20 00
same	Mollie	Second	15 00
Geo. E. McKaig, Troy, O.....	Lady Bird	First	20 00
L. S. Braddock, Mt. Vernon, O.....	Leila	Second	15 00
James Comstock, Sunbury, O.....			
<i>Filly 1 year old and under 2.</i>			
Otho Curl & Co., Cardington, O.....	Nellie	First	10 00
<i>Brood Mares with foal at side.</i>			
Norman Gay, Columbus, O.....	Lucy	Second	15 00
J. M. Chambers, Avenue, O.....	Flora	First	25 00
Joe. H. Cornell, Alexandria, O.....			

B. I. Jones, Expert Judge.

HORSES—CLYDESDALE, ENGLISH DRAFT, BELGIAN AND SHIRE.

Owner's name and post-office.	Name of animal.	Premi	Amount.
<i>Stallions 4 years old and over.</i>			
Headly & Price, Radnor, O.....	Tyrant	First	\$30 00
John G. Gano, Selma, O.....	Garret II .....	.....	.....
Bell Bros., Wooster, O.....	English Squire.....	.....	.....
Geo. E. McKaig, Troy, O.....	Captivator	Second	15 00
Bocco Bros., Jeffersonville, O.....	Lord Walter Campbell.....	.....	.....
Emanuel Reed, Kingsway, O.....	.....	.....	.....
<i>Stallions 3 years old and under 4.</i>			
Bell Bros., Wooster, O.....	Park Hero II.....	.....	.....
same	Groveman of War	First	20 00
same	Grove Rector II.....	.....	.....
Geo. E. McKaig, Troy, O.....	Chief Baron	Second	10 00
J. W. Swickard, New Albany, O.....	Garfield .....	.....	.....
Chas. E. Tuller, Dublin, O.....	Barnaby III .....	.....	.....
same	Leak Arthur .....	.....	.....
<i>Stallions 2 years old and under 3.</i>			
Bell Bros., Wooster, O.....	Grove Sevator .....	.....	.....
same	Royal Sam	First	15 00
Geo. E. McKaig, Troy, O.....	Everton Laddie.....	Second	8 00
<i>Mares 4 years old and over.</i>			
Geo. E. McKaig, Troy, O.....	Josephine.....	Second	10 00
Bocco Bros., Jeffersonville, O.....	Woodlands Smart III.....	First	20 00
<i>Filly 1 year old and under 2.</i>			
Michael Moran, Columbus, O.....	Nellie	First	10

T. A. Johnston, Expert Judge.

FRENCH DRAFT, PERCHERON AND NORMAN.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 4 years old and over.</i>			
T. M. Baldwin, Ashley, O.....	Albans .....	.....	.....
Bell Bros., Wooster, O.....	Jougleur .....	.....	.....
N. J. Hoddy, Columbus, O.....	Ammon	Second	\$15 00
McLaughlin Bros., Columbus, O.....	.....	.....	.....
same .....	.....	First	30 00
Penry and Jones, Radnor, O.....	Cevcoau .....	.....	.....
J. A. Weinland, Westerville, O.....	.....	.....	.....
<i>Stallions 3 years old and under 4.</i>			
Jones Bros., Plain City, O.....	Greluche.....	Second	10 00
Bell Bros., Wooster, O.....	Pique	First	20 00
McLaughlin Bros., Columbus, O.....	.....	.....	.....
<i>Stallions 2 years old and under 3.</i>			
Bell Bros., Wooster, O.....	Allali	First	15 00
Ed. Patrick, East Liberty, O.....	Dandy	Second	8 00
J. A. Weinland, Westerville, O.....	Val Jean .....	.....	.....
same	Davilo, Jr .....	.....	.....
<i>Stallions 1 year old and under 2.</i>			
R. Edwards, Center Village, O.....	.....	First	10 00
Chas. E. Tuller, Dublin, O.....	Jack .....	.....	.....
J. A. Weinland, Westerville, O.....	Carnot	Second	5 00
same	Chevalier .....	.....	.....

HORSES—FRENCH DRAFT, PERCHERON AND NORMAN—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Mares 4 years old and over.</i>			
Jones Bros., Plain City, O.....	Cinderella	First	\$20 00
J. A. Weinland, Westerville, O.....	Evalena .....	.....	.....
same	Tennaille .....	.....	.....
same	Modesty	Second	10 00
<i>Mares 2 years old and under 2.</i>			
Jones Bros., Plain City, O.....	Dora .....	.....	.....
same	La Rein .....	.....	.....
Bocco Bros., Jeffersonville, O.....	Bonnie	First	15 00
J. A. Weinland, Westerville, O.....	Pauline	Second	8 00
<i>Brood mares with foal at side.</i>			
Jones Bros., Plain City, O.....	Cinderella	Second	15 00
same	Trisette .....	.....	.....
R. Edwards, Center Village, O.....	Xenia	First	25 00
J. A. Weinland, Westerville, O.....	Evalena .....	.....	.....
same	Modesty .....	.....	.....
same	Tennaille .....	.....	.....

T. A. Johnston, Expert Judge.

GRADE DRAFT.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Gelding 3 years old and under 4.</i>			
James Comstock, Sunbury, O.....	Sam	First	\$20 00
<i>Gelding 2 years old and under 2.</i>			
T. L. Postle, Camp Chase, O.....	Jerry	Second	8 00
A. M. Gibson, "	Dan	First	15 00
James Comstock, Sunbury, O.....	John .....	.....	.....
<i>Gelding 1 year old and under 2.</i>			
F. M. Gibson, Camp Chase, O.....	Charley	First	10 00
<i>Mares 4 years old and over.</i>			
Jones Bros., Plain City, O.....	Doll	Second	10 00
A. B. Shafer, Sunbury, O.....	.....	First	20 00
Bocco Bros., Jeffersonville, O.....	Matta .....	.....	.....
<i>Mares 3 years old and under 4.</i>			
J. A. Weinland, Westerville, O	Beatrice	First	20 00
<i>Mares 2 years old and under 2.</i>			
F. M. Baldwin, Ashley, O.....	.....	Second	8 00
Orin R. King, West Jefferson, O.....	.....	First	15 00
<i>Fillics 1 year old and under 2.</i>			
J. A. Weinland, Westerville, O.....	Leona	First	10 00
same	Emma	Second	5 00
<i>Brood mares with foal at side.</i>			
F. M. Baldwin, Ashley, O.....	.....	.....	.....
Jones Bros., Plain City, O.....	Doll	Second	15 00
John W. Miles, Sunbury, O.....	Daisy .....	.....	.....

HORSES—GRADE DRAFT—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Brood mares with foal at side -Concluded.</i>			
Booco Bros., Jeffersonville, O.....	Molta and Prince.....		
J. A. Weinland, Westerville, O.....	Alma.....		
same	Margarite.....		
Orin R. King, West Jefferson, O.....	Nellie.....	First	\$25 00
<i>Colts, either sex, under 1 year old.</i>			
F. M. Baldwin, Ashley, O.....			
Jones Bros., Plain City, O.....		Second	5 00
Jno. W. Miles, Sunbury, O.....		First	5 00
Booco Bros., Jeffersonville, O.....	Prince.....		
J. A. Weinland, Westerville, O.....	Gretta.....		
same	Almas Colt.....		

T. A. Johnston, Expert Judge.

GELDINGS AND MARES FOR LIGHT HARNESS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Mare or gelding 4 years old and over.</i>			
Thos. Evans, Newark, O.....	Bella.....	First	\$20 00
Wm. Wagner, Plain City, O.....	Mollie.....		
O. P. Chaney, Cana, Winchester, O.....	Gelding.....		
L. S. Braddock, Mt. Vernon.....	Mare.....		
Jonathan Hay, St. Paul.....	Mike Scooner.....		
Albert Pickering, Columbus.....	Jack.....	Second	10 00
<i>Mare or gelding three years old and under four.</i>			
Thos. Evans, Newark, O.....	Glen.....		
B. F. Helser, Hilliards, O.....	Tobe.....		
Ed. Hall, Columbus, O.....	Myrtle Peake.....	First	15 00
Heber Welch, Grove City, O.....	Flora.....		
Brown and Whitmer, Thornville, O.....	Perry.....		
Bishop Bros., Jerome, O.....			
Fred Kile, Plain City, O.....	Lude Bay Gelding.....		
L. S. Braddock, Mt. Vernon, O.....	Gelding.....	Second	5 00
same	Mare.....		

B. W. Rent, Expert Judge.

ROADSTERS—STANDARD BREED.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 4 years old and over.</i>			
Ed. Hall, Columbus, O.....	Wayfarer.....		
James Alexander, Columbus, O.....	Churchhill.....		
Albert Pickering, Columbus, O.....	Arnom.....		
Bishop Bros., Jerome, O.....	Alacine.....		
C. K. Mason, Waynesville, O.....	Claimant.....		
W. O. Barnes, London, O.....	Rubey.....	First	\$30 00
W. H. Lightner, Dayton, O.....			
Frank Klouse, Pataakala, O.....	Violin.....	Second	15 00

ROADSTERS—STANDARD BREED—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions 3 years old and under 4.</i>			
R. Shockley & Son, Circleville, O.....	Recal.....		
Jonathan Hay, St. Paul, O.....	Woodring.....	First.....	\$20 00
John and Clover, Jeffersonville, O.....	Veauvius.....	Second.....	10 00
<i>Stallions 2 years old and under 3.</i>			
J. W. Townsley, Jamestown, O.....	Patent Right.....		
Jonathan Hay, St. Paul, O.....	Billy Walker.....	First.....	15 00
<i>Stallions 1 year and under 2.</i>			
A. R. Miller, Pataaskala, O.....		First.....	12 00
<i>Mare 3 years old and under 4.</i>			
Bishop Bros., Jerome, O.....	Lady C. Hillhouse.....	First.....	20 00
<i>Mare 2 years old and under 3.</i>			
R. Shockley & Son, Circleville, O.....	Blue Banks.....	First.....	15 00
Jonathan Hay, St. Paul, O.....	Aggie Free.....	Second.....	8 00
<i>Brood mares with foal at side.</i>			
O. P. Chaney, Canal Winchester, O.....		First.....	25 00
A. R. Miller, Pataaskala, O.....		Second.....	15 00

J. Wilson Edwards, Expert Judge.

SADDLE HORSES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallion, mare or gelding for saddle.</i>			
James P. Beall, Columbus, O.....	Dapple Gray Stallion.....		
J. B. Vause, Luckbourne, O.....	Nobby.....		
E. L. McCollen, Columbus, O.....	Harry.....	First.....	\$25 00
James Kincaid, Columbus, O.....	Bess.....	Second.....	15 00
S. H. Turner, Columbus, O.....	Richmond.....		
H. D. Shepard, Columbus, O.....	Dandy.....		

James Long, J. Wilson Edwards, Expert Judges.

MATCHED HORSES AND MARES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pair light harness geldings or mares.</i>			
Louis C. Simon, Columbus, O.....	Tom and Jerry.....		
Burton Case, Granville, O.....	Topey and Fanny.....	First.....	\$25 00
Thos. Evans, Newark, O.....	Belle and Flora.....	Second.....	15 00
<i>Pair farm or draft geldings or mares.</i>			
A. B. Shafer, St. Mary, O.....		First.....	25 00

T. A. Johnson, Expert Judge.

PONIES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions of any age.</i>			
W. H. Smith, Columbus, O	Jed.....	Second ..	\$1 00
Cobb Gavitt, Ashley, O		First	10 00
same			
<i>Mares of any age.</i>			
Cobb Gavitt, Ashley, O		First	10 00
same		Second ..	5 00
<i>Colts under one year old.</i>			
Cobb Gavitt, Ashley, O		First	5 00
same		Second ..	3 00
<i>Herds of not less than seven head.</i>			
Cobb Gavitt, Ashley, O		First	15 00

T. A. Johnston, *Expert Judge.*

SWEEPSTAKES ON COACH HORSES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallion with five of his colts.</i>			
Otho Curl & Co., Cardington, O	Escebas	First	\$40 00
<i>Stallions of any age.</i>			
Bell Bros., Wooster, O	Craft	First	50 00
L. D. Converse, Plain City, O	Young Lexington		
McLaughlin Bros., Columbus, O			
same			
same			
same			
Otho Curl & Co., Cardington, O	Escebas		
Geo. E. McKaig, Troy, O	Mr William II		
J. W. Townsley, Jamestown, O	Uncas		
John W. Miles, Sunbury, O	Lodger		
<i>Mare of any age.</i>			
Otho Curl & Co., Cardington, O	Kitty	First	20 00
James Comstock, Sunbury, O			
C. Eubanks, Dublin, O	Pet		

B. W. Kent, *Expert Judge.*

HORSES—SWEEPSTAKES FOR CLYDESDALE, ENGLISH DRAFT, BELGIAN AND SHIRE.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallion of any age.</i>			
John G. Gano, Selma, O.....	Tyrant.....		
Bell Bros., Wooster, O.....	Park Hero.....		
Headley and Price, Radnor, O.....	Husbandman.....		
Geo. E. McKaig, Troy, O.....	English Squire.....		
Booco Bros., Jeffersonville, O.....	Captivator.....		
Emanuel Keed, Kingsway, O.....	Lord Walter Campbell.....		
<i>Mare of any age.</i>			
Booco Bros., Jeffersonville, O.....	Wonderland Smart III.....	First	\$20 00

John W. Graves, Cambridge, O., *Expert Judge.***SWEEPSTAKES ON PERCHERON AND NORMAN.**

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallion and five colts.</i>			
F. M. Baldwin, Ashley, O.....	Albana.....		
Jones Bros., Plain City, O.....	Greluche.....	First	\$40 00
J. A. Weinland, Westerville, O.....	Cercean		

B. I. Jones, V. D. Craig and John W. Graves, *Expert Judges.*

<i>Stallions any age.</i>			
F. M. Baldwin, Ashley, O.....	Albana.....		
Jones Bros., Plain City, O.....	Greluche.....		
Bell Bros., Wooster, O.....	Pique.....	First	30 00
Ed. Patrick, East Liberty, O.....	Dandy		
McLaughlin Bros., Columbus, O.....	.....	
same .....	.....	
J. A. Weinland, Westerville, O.....	Cercean		

A. Jackson, *Expert Judge.*

<i>Mares of any age.</i>			
Jones Bros., Plain City, O.....	Cinderella		
same	Dora		
J. A. Weinland, Westerville, O.....	Tennaille		
same	Beatrice	First	20 00

John W. Graves, Cambridge, O., *Expert Judge.***SWEEPSTAKES ON ROADSTERS.**

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallion and five colts.</i>			
D. Hickman & Son, Reynoldsburg, O.....	.....	
Samuel C. Belknap, Columbus, O.....	Hannis Junior.....		
L. B. Braddock, Mt. Vernon.....	.....	First	\$40 00

HORSES—SWEEPSTAKES ON ROADSTERS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Stallions of any age.</i>			
D. Hickman & Son, Reynoldsburg, O.....	Arnold .....	.....	.....
Albert Pickering, Columbus, O.....	Claimant.....	.....	.....
Bishop Bros., Jerome, O.....	Ruby.....	First	\$30 00
C. V. Mason, Waynesville, O.....	Patent Right.....	.....	.....
W. O. Barnes, Millersburg, O.....	.....	.....	.....
W. H. Lightner, Dayton, O.....	.....	.....	.....
J. W. Townsley, Jamestown, O.....	.....	.....	.....
<i>Mares of any age.</i>			
Thos. Evans Newark, O.....	Flora.....	First	20 00
Ed. Hall, Columbus, O.....	Myrtle Peake.....	.....	.....
Bishop Bros., Jerome, O.....	Grace Delano .....	.....	.....
Jonathan Hay, St. Paul, O.....	.....	.....	.....

B. W. Kent, *Expert Judge.*

SPECIAL OFFERING BY THE AMERICAN SHIRE HORSE ASSOCIATION.

[Only first prize winners in the regular class eligible to compete.]

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Shire stallions of any age.</i>			
Bell Bros., Wooster, O.....	Grove Man of War.....	.....	.....
same	Royal Sam.....	.....	.....
Headley & Price, Radnor, O.....	Husbandman	First	\$11. M.
<i>Shire mare of any age.</i>			
I. D. Booco, Jeffersonville, O.....	Weydeland's Smart III.....	First	\$11. M.

J. Wilson Edwards, V. D. Craig, B. I. Jones, *Expert Judges.*

SUMMARY OF THE RACES.

2:39 CLASS—FACING—PURSE, \$500. DIVIDED.

C. H. Blair, Delaware, O., s. g. Little Jimmy.....	1	1	1
J. C. Caldwell Richmondale, O., b. m. Annetta C.....	2	2	2
W. A. Homan, Delaware, O., b. m. Patti West.....	4	3	3
A. M. House, Wyoming, O., br. g. Joe Wilkes.....	3	4	4
Dr. L. E. Russell, Dayton, O., d. m. Bessie R.....	dis		
Time: 2:35½, 2:36½, 2:37¼.			

3:00 MINUTE CLASS—TROTTING—PURSE, \$500.

C. M. Harding, Franklin, O., g. s. Nicholas B.....	7	1	1	1
O. F. Peddicord, Wilmington, O., b. m. Bell P.....	1	3	2	3
L. H. Van Meter, Springfield, O., br. s. Allen Boy.....	2	2	3	2
Jonathan Hay, St. Paul, O., br. g. Dick Doble.....	3	6	5	6
C. H. Stimson, Newark, O., br. m. Emma Wilkes.....	5	4	4	4
S. D. Martin, Delaware, O., s. g. Rube Burrows.....	4	5	6	5
W. A. Homan, Delaware, O., b. s. Nil Dale.....	6	7	dr.	
Time: 2:40, 2:39, 2:39, 2:37½.				

2:38 CLASS—TROTTING—PURSE, \$500.

L. D. Converse & Bro., Urbana, O., br. m. Nix.....	1	1	1
C. V. Mason, Waynesville, O., ch. s. Claimant.....	2	2	2
S. D. Martin, Delaware, O., br. m. Little Bit.....	4	3	4
H. F. Dickson, W. S. Springs, Va., bk. m. Lady Foxhall.....	3	5	5
H. S. Kingeman, Ellsworth, O., ch. g. Tod.....	7	6	8
Dr. T. A. Burnett, Springfield, O., b. s. Carthage.....	8	4	7
D. G. Willey, Newark, O., Grover C.....	5	3	6
Geo. H. Smith, Chillicothe, O., Five Ply.....	6	7	dr.
Time: 2:32, 2:30½, 2:32¼.			

2:22 CLASS—TROTTING—PURSE, \$500. DIVIDED.

D. J. Hanmer, Lowell, Mich., br. s. Morris H.....	1	1	1
E. H. Gaston, Logan, O., br. g. Frank B.....	3	3	2
W. Q. Barnes, London, O., b. m. Thalia.....	5	2	3
Fred Burrell, jr., Newark, O., br. s. Suitor.....	2	4	4
Robinson & Kenoyer, London, O., Ed. Graham.....	4	5	5
Time: 2:24½, 2:25½, 2:24½.			

FREE FOR ALL FACING—PURSE, \$500. DIVIDED.

The Ketcham Farm, Toledo, O., br. m. Lucy B.....	3	1	8	2	1	1
C. H. Blair, Delaware, O., w. g. Tommy.....	4	3	4	1	3	2
Louis C. Simon, Columbus, O., b. s. Fred Arthur.....	2	4	2	3	2	ro.
Emil Ambos, Columbus, O., s. g. Pickaway.....	1	2	1	dis.		
N. Johnson, Milledburg, O., b. s. Little Joker.....	5	dr.				
Time: 2:21½, 2:25½, 2:20½, 2:27½, 2:23¼, 2:29½.						

2:29 CLASS—TROTTING—PURSE, \$500. DIVIDED.

Otto S. Jones, Granville, O., b. g. Otto J.....	2	3	1	2	1	1
Eastburn Frey, Leesburg, O., b. m. Blue Grass Maid.....	3	1	2	1	2	3
Geo. A. Beam, London, O., b. s. Sentinel Wilkes.....	1	2	4	4	3	2
J. Doyle, Columbus, O., b. m. Maggie B.....	4	5	6	3	4	ro.
C. H. Blair, Delaware, O., b. g. Alhambra.....	6	7	3	7	6	ro.
C. E. Vincent, Westerville, O., s. m. Maud Stillson.....	7	4	5	5	7	ro.
Al Honaker, Springfield, O., Alice C.....	5	6	7	6	5	ro.
Time: 2:31, 2:31½, 2:25½, 2:31½, 2:30, 2:30.						

245 CLASS—TROTTING—PURSE, \$300. DIVIDED.

H. B. Madden, Hartford, O., b. g. Dan Mace.....	4	5	1	1	1
J. H. Hartley, Montgomery, Ala., b. m. Little Bit.....	1	3	4	4	4
F. W. Silver, Wellsville, O., b. g. Monte Christo.....	5	2	2	2	3
Burton Case, Granville, O., b. g. Alpha.....	3	4	3	3	3
John Windish, Crescentville, O., br. s. Carnival.....	2	1	5	dr.	

Time: 2:37 $\frac{1}{2}$, 2:39 $\frac{1}{4}$, 2:37, 2:37 $\frac{1}{2}$, 2:30 $\frac{1}{4}$.

233 CLASS—TROTTING—PURSE, \$500. DIVIDED.

Don A. Martin, Woodstock, O., bk. m. Bell Martin.....	1	1	1		
E. H. Gaston, Logan, O., b. s. Artie B.....	2	4	5		
Watkins Bros., Prospect, O., b. g. Gas.....	4	2	7		
J. W. Russell, Columbus, b. s. Little Mack.....	7	9	2		
N. Johnson, Millersburg, O., b. g. Dr. L.....	5	3	4		
Alfred Dun, Sabina, O., bk. g. Whip.....	3	5	6		
James B. Hatch, Mansfield, O., b. g. Nutling.....	3	6	3		
S. D. Martin, Denver, Col., Lady Maud.....	6	8	dr.		
H. S. Kingeman, Ellsworth, O., ch. g. Tod.....	9	7	dia.		

Time: 2:30 $\frac{1}{4}$, 2:30, 3:22 $\frac{1}{4}$.

ENTRIES AND AWARDS.

CATTLE—SHORTHORNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
D. W. Brown & Son, Tiffin, O.....	Sylvannes.....	First.....	\$30 00
N. S. McKay, Lumberton, O.....	Expectation.....	.....	.....
David Alban, Venedocia, O.....	Alistane 3rd.....	Second.....	15 00
<i>Bull 2 years old and under 3.</i>			
G. W. Brown, Mt. Gilead, O.....	Sharon of Homewood.....	First.....	30 00
C. W. Edenfield, Sugar Tree Ridge, O.....	Sharon Duke of Kenton.....	Second.....	15 00
<i>Bull 1 year old and under 2.</i>			
O. W. Edenfield, Sugar Tree Ridge, O.....	.....	Second.....	10 00
David Alban, Venedocia, O.....	.....	First.....	20 00
<i>Bull calf.</i>			
D. W. Brown & Son, Tiffin, O.....	Rob. Roy.....	.....	.....
S. Hanna & Son, Unionvale, O.....	Young Cumberland.....	Second.....	5 00
same	Rambler.....	.....	.....
David Alban, Venedocia, O.....	.....	First.....	10 00
<i>Cow 3 years old and over.</i>			
D. W. Brown & Son, Tiffin, O.....	Oncida.....	.....	.....
same	Cambria.....	.....	.....
N. S. McKay, Lumberton, O.....	Young Frantic 2nd.....	Second.....	15 00
G. W. Brown, Mt. Gilead, O.....	.....	.....	.....
C. W. Edenfield, Sugar Tree Ridge, O.....	.....	.....	.....
same	.....	.....	.....
David Alban, Venedocia, O.....	.....	First.....	30 00
same	.....	.....	.....
<i>Cow 2 years old and under 3.</i>			
D. W. Brown & Son, Tiffin, O.....	Shawnee Flower.....	Second.....	15 00
N. S. McKay, Lumberton, O.....	Beauty.....	First.....	30 00
G. W. Brown, Mt. Gilead, O.....	.....	.....	.....
C. W. Edenfield, Sugar Tree Ridge, O.....	.....	.....	.....
David Alban, Venedocia, O.....	.....	.....	.....
same	.....	.....	.....
<i>Heifer 1 year old and under 2.</i>			
D. W. Brown & Son, Tiffin, O.....	Mable Grace.....	.....	.....
G. W. Brown, Mt. Gilead, O.....	.....	.....	.....
C. W. Edenfield, Sugar Tree Ridge, O.....	.....	.....	.....
same	.....	.....	.....
David Alban, Venedocia, O.....	.....	First.....	15 00
same	.....	Second.....	8 00
D. W. Brown & Son, Tiffin, O.....	Lady J.....	.....	.....
<i>Heifer calf.</i>			
D. W. Brown & Son, Tiffin, O.....	Aggie.....	.....	.....
same	Della.....	.....	.....
N. S. McKay, Lumberton, O.....	Jenny May 5th.....	.....	.....
same	Minnie.....	.....	.....
G. W. Brown, Mt. Gilead, O.....	.....	Second.....	5 00
same	.....	.....	.....
C. W. Edenfield, Sugar Tree Ridge, O.....	.....	.....	.....
same	.....	.....	.....
David Alban, Venedocia, O.....	.....	First.....	10 00
same	.....	.....	.....

Wm. Warfield, Expert Judge.

CATTLE—SHORTHORNS—Continued.

Owner's name and post-office	Name of animal.	Premium.	Amount.
<i>Steeptakes—Bull and four cows.</i>			
D. W. Brown & Son, Tiffin, O.....
C. W. Edenfield, Sugar Tree Ridge, O.....
David Alban, Venedocia, O.....	First	\$35 00
<i>Three cows each with her own calf.</i>			
D. W. Brown & Son, Tiffin, O.....
N. S. McKay, Lumberton, O.....
G. W. Brown, Mt. Gilead, O.....	First	35 00
<i>Five animals under 2 years old.</i>			
D. W. Brown & Son, Tiffin, O.....
G. W. Brown, Mt. Gilead, O.....
David Alban, Venedocia, O.....	First	35 00
<i>Cow with two of her own produce.</i>			
D. W. Brown & Son, Tiffin, O.....	First	35 00
G. W. Brown, Mt. Gilead, O.....
C. W. Edenfield, Sugar Tree Ridge, O.....

DEVON.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
Irvin York & Son, Brock, O.....	Brock Boy.....	.....	.....
McMillen & Son, Rix Mill, O.....	.....	Second	\$15 00
Robert Boyd, Colliers, W. Va.....	Champion B.....	.....	.....
S. Bonar & Son, Coon Island, Pa.....	Candidate.....	.....	.....
D. J. Whitmore, Casttown, O.....	Little Brot.....	First	30 00
<i>Bull 2 years old and under 3.</i>			
Irvin York & Son, Brock, O.....	Cleveland	First	30 00
S. Bonar & Son, Coon Island, Pa.....	Adamsonia .....	.....	.....
D. J. Whitmore, Casttown	Koik L.....	Second	15 00
<i>Bull 1 year old and under 2.</i>			
Irvin York & Son, Brock, O.....	Gov. Campbell.....	First	15 00
McMillen & Son, Rix Mills, O.....	.....	.....	.....
S. Bonar & Son, Coon Island, Pa.....	D. Walters.....	Second	8 00
D. J. Whitmore, Casttown, O.....	Butter.....	.....	.....
<i>Bull calf.</i>			
Irvin York & Son, Brock, O.....	Flickory Boy.....	.....	.....
same	.....	.....	.....
McMillen & Son, Rix Mill, O.....	Luckeye Buy.....	First	10 00
Robert Boyd, Colliers, W. Va.....	.....	Second	5 00
S. Bonar & Son, Coon Island, Pa.....	Fred.....	.....	.....
D. J. Whitmore, Casttown, O.....	.....	.....	.....
<i>Cows 3 years old and over.</i>			
Irvin York & Son, Brock, O.....	Settle	First	30 00
same	Sias	Second	15 00
McMillen & Son, Rix Mills, O.....
same

ENTRIES AND AWARDS.

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CATTLE—DEVONS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cows 3 years old and over.</i>			
Robert Boyd, Colliers, W. Va.....	Curiosity.....		
same	Joy.....		
S. Bonar & Son, Coon Island, Pa.....	Gertrude.....		
same	Sweet.....		
D. J. Whitmore, Casstown, O.....	Genase.....		
same	Beulah Lee.....		
<i>Cows 2 years old and under 2.</i>			
Irvin York & Son, Brock, O.....	Sally.....	Second..	\$15 00
McMillen & Son, Rix Mill, O.....	Daisy York.....	First.....	30 00
same			
S. Bonar & Son, Coon Island, Pa.....	Estile.....		
same	Rhine.....		
D. J. Whitmore, Casstown, O.....	Pondle C.....		
<i>Heifer 1 year old and under 2.</i>			
Irvin York & Son, Brock, O.....	Ohio Girl.....	Second..	8 00
same	Pretty May.....	First.....	15 00
McMillen & Son, Rix Mills, O.....			
same			
Rob't Boyd, Colliers, W. Va.....	Nelly Bly.....		
same	Topay.....		
S. Bonar & Son, Coon Island, Pa.....	Saxie.....		
same	Viola.....		
D. J. Whitmore, Casstown, O.....	Zela Hebe.....		
same	Leda Hebe.....		
<i>Heifer calf.</i>			
Irvin York & Son, Brock, O.....	Doly 4th.....	First.....	10 00
same	Sally.....		
McMillen & Son, Rix Mills, O.....			
same			
Rob't Boyd, Colliers, W. Va.....	Lilly.....		
same	Victory.....		
S. Bonar & Son, Coon Island, Pa.....	Anthoma.....		
same	Geotime.....		
D. J. Whitmore, Casstown, O.....		Second..	5 00
W. J. Emry, <i>Expert Judge.</i>			
<i>Sweepstakes bull and 4 cows.</i>			
Irvin York & Son, Brock, O.....		First.....	35 00
McMillen & Son, Rix Mills, O.....			
Robert Boyd, Colliers, W. Va.....			
S. Bonar & Son, Coon Island, Pa.....			
D. J. Whitmore, Casstown, O.....			
<i>Three cows each with her own calf.</i>			
Irvin York & Son, Brock, O.....		First.....	35 00
Robert Boyd, Colliers, W. Va.....			
S. Bonar & Son, Coon Island, Pa.....			
<i>Five animals under 2 years old.</i>			
Irvin York & Son, Brock, O.....		First.....	35 00
Robert Boyd, Colliers, W. Va.....			
D. J. Whitmore, Casstown, O.....			
<i>Cow with 2 of her own produce.</i>			
Irvin York & Son, Brock, O.....		First.....	35 00
McMillen & Son, Rix Mills, O.....			
Robert Boyd, Colliers, W. Va.....			
D. J. Whitmore, Casstown, O.....			

CATTLE—HEREFORDS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
H. H. Clough, Elyria, O.....	Peerless of Rockland	First	\$30 00
G. W. Harness & Sons, Galveston, Ind.....	Earl of Shadeland.....	.....	.....
Elijah Field, Camden, O.....	Hero II .....	.....	.....
John Savage, Elyria, O.....	Peerless Wilton V	Second	15 00
<i>Bull 2 years old and under 3.</i>			
Botham Agri. Co., Pontiac, Mich.....	Harold	First	30 00
<i>Bull 1 year old and under 2.</i>			
H. H. Clough, Elyria, O.....	.....	Second	8 00
G. W. Harness & Sons, Galveston, Ind.....	.....	.....	.....
Elijah Field, Camden, O.....	.....	.....	.....
Botham Agri. Co., Pontiac, Mich.....	.....	First	15 00
<i>Bull calf.</i>			
H. H. Clough, Elyria, O.....	Florida	Second	5 00
G. W. Harness & Sons, Galveston, Ind.....	Hoosier Boy .....	.....	.....
same	Little Kid .....	.....	.....
Botham Agri. Co., Pontiac, Mich	Corrector	First	10 00
<i>Cow 3 years old and over.</i>			
H. H. Clough, Elyria, O.....	Jennie V .....	.....	.....
same	Milley of Rockland.....	Second	15 00
G. W. Harness & Sons, Galveston, Ind.....	Jessie VII .....	.....	.....
same	Perfection VII.....	.....	.....
Elijah Field, Camden, O.....	Ida Wilton .....	.....	.....
Botham Agri. Co., Pontiac, Mich.....	Lemon III .....	.....	.....
same	Miss Archibold A.....	First	30 00
<i>Cow 2 years old and under 3.</i>			
H. H. Clough, Elyria, O.....	Jewell III .....	.....	.....
G. W. Harness & Sons, Galveston, Ind.....	Jen .....	.....	.....
same	Pet .....	.....	.....
Elijah Field, Camden, O.....	Duchess II .....	.....	.....
Botham Agri. Co., Pontiac, Mich.....	Purity	First	30 00
same	Mystic	Second	15 00
<i>Cow or Heifer 1 year old and under 2.</i>			
H. H. Clough Elyria, O.....	Lady Frances II .....	.....	.....
same	New Year .....	.....	.....
same	Cocoanut	First	15 00
G. W. Harness & Sons, Galveston, Ind.....	Catharine .....	.....	.....
same	Beauty B.....	.....	.....
Elijah Field, Camden, O.....	Belle .....	.....	.....
Botham Agri. Co., Pontiac Mich	2d Beaubois Purity.....	Second	8 00
same	2d Beaubois Brenda .....	.....	.....
<i>Sweepstakes, Bull and 4 Cows.</i>			
H. H. Clough, Elyria, O.....	.....	.....	.....
G. W. Harness & Sons, Galveston, Ind.....	.....	First	35 00
Botham Agri. Co., Pontiac, Mich.....	.....	.....	.....
<i>3 Cows each with her own calf.</i>			
G. W. Harness & Sons, Galveston, Ind.....	.....	First	35 00
Elijah Field, Camden, O.....	.....	.....	.....
<i>5 animals under 2 years old.</i>			
H. H. Clough, Elyria, O.....	.....	.....	.....
G. W. Harness & Sons, Galveston, Ind.....	.....	First	35 00
Elijah Field, Camden, O.....	.....	.....	.....
<i>Cow with 2 of her own produce.</i>			
H. H. Clough, Elyria, O.....	.....	First	35 00
G. W. Harness & Sons, Galveston, O.....	.....	.....	.....
Elijah Field, Camden, O.....	.....	.....	.....
Botham Agri. Co., Pontiac, Mich.....	.....	.....	.....

CATTLE—HEREFORDS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Heifer calf.</i>			
H. H. Clough, Elyria.....	Jewel 5th.....	Second..	5 00
same	Actress.....	First....	10 00
G. W. Harries & Sons, Galveston, Ind.....	Erica.....		
same	Queen.....		
Botham Agricultural Co., Pontiac, Mich.....	Kareness.....		
same	Lavender.....		

JERSEYS.

Owner's name and post office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
Belmont Jersey Cattle Co., Columbus, O.....	Fancy Tolteet.....		
same	Ethlo Tormentor.....		
Mrs. A. M. Halleck, Columbus, O.....	Meste of St. Lampart.....		
C. Easthope, Niles, O.....	King of Ashantee.....	First....	\$30 00
same	Azela Wanderer.....	Second..	15 00
<i>Bull 2 years old and under 3.</i>			
Mrs. A. M. Halleck, Columbus, O.....	Ida's Rioter Fancy.....	Second..	15 00
C. Easthope, Niles, O.....	Ashantee's Claimant.....		
same	Pride of Ashantee.....	First....	30 00
H. B. Levering, Chesterville, O.....	Belsarius.....		
<i>Bull 1 year old and under 2.</i>			
J. A. Peasley, Flint, O.....	Hiram Abiff.....		
Thos. Beer, Bucyrus, O.....	Schonkoff.....		
C. Easthope, Niles, O.....	Ashantee's Guy Fawkes.....	First....	15 00
same	Sir Nightingale.....	Second..	8 00
J. A. Peasley, Flint, O.....	Comely's Rioter.....		
<i>Bull calf.</i>			
J. A. Peasley, Flint, O.....	Rudina Pogis.....		
same	Signal Heller Pogis.....		
Belmont Jersey Cattle Co., Columbus, O.....	Lord Harry II.....		
same	Ten I See Combination.....	Second..	5 00
Mrs. A. M. Halleck, Columbus, O.....	Exile of St. Lambert XLVI.....		
same	Glen's forment.....		
Thos. Beer, Bucyrus, O.....	Signaler's Wanderer.....	First....	10 00
C. Easthope, Niles, O.....			
same			
<i>Cow 3 years old and over.</i>			
Belmont Jersey Cattle Co., Columbus, O.....	Rutilone.....	Second..	15 00
same	Bess of Belmont.....		
Mrs. A. M. Halleck, Columbus, O.....	Mema II.....		
same	Transmarine.....		
Thos. Beer, Bucyrus, O.....	Alfritha.....		
C. Easthope, Niles, O.....	Lalla Rookh of Sugar Grove.....	First....	30 00
same	Fancy Lee's Azella.....		
same	Bremette Star.....		
same	Georgias Milkmaid.....		

CATTLE—JERSEYS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cows 2 years old and under 3.</i>			
Belmont Jersey Cattle Co., Columbus, O.....	Derjava.....		
same.....	Beas B. Landseer.....		
same.....	Dempsy Beauty.....	First.....	\$30 00
Mrs. A. M. Halleck, Columbus, O.....	Dubenna.....		
same.....	Barno Kanso.....		
C. Easthope, Niles, O.....	Homeland's Signalera.....		
same.....	Edna's Queen.....	Second..	15 00
<i>Heifer 1 year old and under 2.</i>			
J. A. Peasley, Flint, O.....	Signorella Pogis.....		
Belmont Jersey Cattle Co., Columbus, O.....	Fancy Nenita.....		
same.....	Miss Primrose.....	Second..	8 00
same.....	Heier's Queen Rex.....		
C. Easthope, Niles, O.....	Azelda 4th.....	First.....	15 00
same.....	Ashantee's Brunette.....		
same.....	Maharanda.....		
<i>Heifer calf.</i>			
J. A. Peasley, Flint, O.....	Gertie's Torment.....		
Belmont Jersey Cattle Co., Columbus, O.....	Ruthioma's Queen.....		
same.....	Lady Harry.....		
same.....	Ethios Myrtle.....		
same.....	Jean.....	Second..	5 00
Mrs. A. M. Halleck, Columbus, O.....	Grace Sherwood 2d.....		
Thos. Beer, Bucyrus, O.....	Mema 1stec.....		
same.....	May Molah.....		
C. Easthope, Niles, O.....	Lala Book's Princess.....		
same.....	Valhalla.....	First.....	10 00
<i>Sweepstakes, bull and 4 cows.</i>			
Belmont Jersey Cattle Co., Columbus, O.....			
C. Easthope, Niles, O.....		First.....	35 00
<i>Three cows each with her own calf.</i>			
Belmont Jersey Cattle Co., Columbus, O.....			
Mrs. A. M. Halleck, Columbus, O.....			
Thos. Beer, Bucyrus, O.....			
C. Easthope, Niles, O.....		First.....	35 00
<i>Five animals under 2 years old.</i>			
Belmont Jersey Cattle Co., Columbus, O.....		First.....	35 00
C. Easthope, Niles, O.....			
<i>Cow with 2 of her own produce.</i>			
Belmont Jersey Cattle Co., Columbus, O.....			
Thos. Beer, Bucyrus, O.....		First.....	35 00
C. Easthope, Niles, O.....			

Louis Brush, Buffalo, N. Y., Expert Judge.

AYESHIRE.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
Henry Betts, Wellington, O.....	Welfare.....	Second..	\$15 00
R. J. & W. J. Munce, Clokey, Pa.....	Jimmy Jenkins.....		
Robert M. Carrons, Washington, Pa.....	Premium Bell.....	First.....	30 00

CATTLE—AYRESHIRE—Continued.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 2 years old and under 3.</i>			
H. Betts, Wellington, O.....	Professor Philsinger.....	Second ..	\$15 00
R. J. & W. J. Munce, Clokey, Pa.....	Allmes Sir Hugh.....	First	80 00
Robert M. Carrons, Washington, Pa.....			
<i>Bull 1 year old and under 2.</i>			
H. Betts, Wellington, O.....	Gov. Delemater.....	First	15 00
R. J. & W. J. Munce, Clokey, Pa.....	Oak Ridge Lad.....		
Wm. F. & J. F. Rogers, Huntsville, O.....	McHebron	Second ..	8 00
Robert M. Carrons, Washington, Pa.....			
<i>Bull calf.</i>			
H. Betts, Wellington, O.....		Second ..	5 00
same	Poke Root.....	First	10 00
R. J. & W. J. Munce, Clokey, Pa.....	Tiddlewinks.....		
Robert M. Carrons, Washington, Pa.....			
<i>Cow 3 years old and over.</i>			
H. Betts, Wellington, O.....	Lilly Hudson 2d.....	Second ..	15 00
same	Calla of A.....		
same	Huldah Hudson.....		
R. J. & W. J. Munce, Clokey, Pa.....	Braw Lass.....	First	80 00
same	Pet Rosa.....		
Wm. F. & J. F. Rogers, Huntsville, O.....	Fancy Myrtle.....		
same	Gracie Myrtle.....		
Robert M. Carrons, Washington, Pa.....	Cordelia.....		
same	Cordelia II.....		
<i>Cows 2 years old and under 3.</i>			
H. Betts, Wellington, O.....		First	30 00
same			
R. J. & W. J. Munce, Clokey, Pa.....	Rie Pender.....		
same	Bessie Douglas.....		
Robert M. Carrons, Washington, Pa.....	Miss Robbit.....	Second ..	15 00
same	Alline Clyde.....		
<i>Heifer 1 year old and under 2.</i>			
H. Betts, Wellington, O.....		First	15 00
same			
R. J. & W. J. Munce, Clokey, Pa.....	Grange Lander.....	Second ..	8 00
same	Leonora Slylock.....		
Wm. F. & J. F. Rogers, Huntsville, O.....	Gracie Myrtle 2d.....		
same	Jessie 2d.....		
Robert M. Carrons, Washington, Pa.....	Young Gipsy.....		
same	Cordelia No. 4.....		
<i>Heifer calf.</i>			
Henry Betts, Wellington, O.....		Second ..	5 00
same			
R. J. & W. J. Munce, Clokey, Pa.....	Grange Dobes.....	First	10 00
same	Emma Douglas.....		
Robert M. Carrons, Washington, Pa.....			
same			
<i>Sweepstakes—Bull and 4 cows.</i>			
H. Betts, Wellington, O.....		First	35 00
Robert M. Carrons, Washington, Pa.....			
<i>Three cows each with her own calf.</i>			
H. Betts, Wellington, O.....		First	35 00
R. J. & W. J. Munce, Clokey, Pa.....			
<i>Five animals under 2 years old.</i>			
H. Betts, Wellington, O.....		First	35 00
Robert M. Carrons, Washington, Pa.....			

CATTLE—AYRESHIRE—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cow with 2 of her own produce.</i>			
H. Betts, Wellington, O.	First	\$35 00
Robert M. Carrons, Washington, Pa.

L. P. Lisson, Expert Judge.

HOLSTEINS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bulls 3 years old and over.</i>			
Stevenson Bros, Bulger, Pa.	Violet's King	First	\$30 00
G. A. Stanton, Greenwood, Ind.	LeRon	Second	15 00
Furdum Bros., Chillicothe, O.	Verbalse Emperor .....	.....	.....
<i>Bull 2 years old and under 3.</i>			
G. A. Stanton, Greenwood, Ind.	Glen LeRon Twish	Second	15 00
Furdum Bros., Chillicothe, O.	Violet S. King, 2d	First	30 00
<i>Bull 1 year old and under 2.</i>			
Stevenson Bros., Bulger, Pa.	Celias Barington	First	15 00
<i>Bull Calf.</i>			
Stevenson Bros., Bulger, Pa.	Schimling's Emperor	Second	5 00
same	Chief of Winnikee .....	.....	.....
G. A. Stanton, Greenwood, Ind.	Violet S. King, 3d .....	.....	.....
Furdum Bros., Chillicothe, O.	Reuben	First	10 00
<i>Cow 3 years old and over.</i>			
Stevenson Bros., Bulger, Pa.	Schimling	First	30 00
same	Shadeland Otley	Second	15 00
G. A. Stanton, Greenwood, Ind.	Forest Maid .....	.....	.....
<i>Cow 2 years old and under 3.</i>			
Stevenson Bros., Bulger, Pa.	Lady Regla .....	.....	.....
G. A. Stanton, Greenwood, Ind.	Pride of Winnikee	First	30 00
Furdum Bros., Chillicothe, O.	Vinnie	Second	15 00
<i>Heifer 1 year old and under 2.</i>			
Stevenson Bros., Bulger, Pa.	Shadeland Evas Queen .....	.....	.....
same	Rara Tritana Morales	Second	3 00
Furdum Bros., Chillicothe, O. ....	.....	First	15 00
<i>Heifer Calf.</i>			
Stevenson Bros., Bulger, Pa.	Regola 6th	First	10 00
G. A. Stanton, Greenwood, Ind.	Pride Toltic	Second	5 00
Furdum Bros., Chillicothe, O. ....	.....	.....	.....
<i>Swceptakes—Bull and 4 cows.</i>			
Stevenson Bros., Bulger, Pa.	First	35 00
G. A. Stanton, Greenwood, Ind.

ENTRIES AND AWARDS.

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CATTLE—HOLSTEINS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Three cows each with her own calf.</i>			
Stevenson Bros., Bulger, Pa.....	First	\$35 00
G. A. Stanton, Greenwood, Ind.....
<i>Five animals under 2 years old.</i>			
G. A. Stanton, Greenwood, Ind.....	First	35 00
<i>Cow with 2 of her own produce.</i>			
Stevenson Bros., Bulger, Pa.....
G. A. Stanton, Greenwood, Ind.....	First	35 00
Pardum Bros., Chillicothe, O.....

L. P. LIMSON, Expert Judge.

BLACK POLLS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
J. P. Hine, Shinrock, O.....	Lord Hillhurst.....	.....	.....
same	Fancy Fellow.....	Second	\$15 00
D. Bradfute & Son, Cedarville.....	Don Cameron.....	First	30 00
<i>Bull 2 years old and under 3.</i>			
G. W. Perry, Cable, O.....	Monon	First	30 00
<i>Bull 1 year old and under 2.</i>			
J. P. Hine, Shinrock, O.....	Roon Bill.....	First	15 00
same	Beauties' Trump.....	.....	.....
D. Bradfute & Son, Cedarville, O.....	Taine 5th.....	Second.....	5 00
G. W. Perry, Cable, O.....	Huston Perry.....	.....	.....
<i>Bull Calf.</i>			
J. P. Hine, Shinrock, O.....	Abbott's Bum	First	10 00
same	Good Fitz Ida.....	.....	.....
G. W. Perry, Cable, O.....	Highway	Second.....	5 00
<i>Cow 3 years old and over.</i>			
J. P. Hine, Shinrock, O.....	Bonny Maid.....	First	30 00
same	Chrinmaid.....	.....	.....
same	Portia.....	.....	.....
D. Bradfute & Son, Cedarville.....	Lilly 3d of Wester Leochel .....	.....	.....
same	Knight's Black Beauty	Second.....	15 00
G. W. Perry, Cable, O.....	May Flower.....	.....	.....
<i>Cow 2 years old and under 3.</i>			
J. P. Hine, Shinrock, O.....	Lady Forbes.....	.....	.....
same	Primrose of Hillhouse.....	First.....	30 00
D. Bradfute & Son, Cedarville, O.....	Variety Lass.....	.....	.....
same	Lonale of Meadow Brook.....	Second.....	15 00
G. W. Perry, Cable, O.....	Dora Lee.....	.....	.....

CATTLE—BLACK POLLS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Heifer 1 year old and under 2.</i>			
J. P. Hine, Shinrock, O	Lady Flora Forbes.....		
same	Fanny's Fancy	Second ..	\$8 00
D. Bradfute & Son, Cedarville, O.....	Lucile of Meadow Brook.....		
same	Flower of Meadow Brook.....	First	15 00
G. W. Perry, Cable, O	Sunflower.....		
<i>Heifer calf.</i>			
J. P. Hine, Shinrock, O	Clennahild A		
same	Ollie A		
D. Bradfute & Son, Cedarville, O.....	Louise of Meadow Brook.....	Second ..	5 00
same	Lenore of Meadow Brook.....	First	10 00
G. W. Perry, Cable, O	Mavis Victory		
<i>Sweepstakes—Bull and 4 cows.</i>			
J. P. Hine, Shinrock, O			
D. Bradfute & Son, Cedarville, O.....		First	35 00
G. W. Perry, Cable, O			
<i>Three cows each with her own calf.</i>			
J. P. Hine, Shinrock, O		First	35 00
G. W. Perry, Cable, O			
<i>Five animals under 2 years old.</i>			
J. P. Hine, Shinrock, O			
D. Bradfute & Son, Cedarville, O.....		First	35 00
G. W. Perry, Cable, O			
<i>Cow with 2 of her own produce.</i>			
J. P. Hine, Shinrock, O			
D. Bradfute & Son, Cedarville, O.....		First	35 00
G. W. Perry, Cable, O			

R. Baker, Elyria, O., Expert Judge

RED POLL.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
V. T. Hills, Delaware, O.....	Pando		
same	Wild Roy	First	30 00
J. McLain Smith, Dayton, O	Vegerins	Second ..	15 00
Henry O. Morris, Circleville, O.....	Peachboy		
<i>Bull 2 years old and under 3.</i>			
Edward Dresbach, Stoutsville, O.....	Haymaker	First	30 00
<i>Bull 1 year old and under 2.</i>			
D. J. Heffner, Circleville, O	Bob	First	15 00
<i>Bull calf.</i>			
V. T. Hills, Delaware, O.....	Gleanor	Second ..	5 00
same	Chink	First	10 00
J. McLain Smith, Dayton, O.....	Norval		
same			
same			
D. J. Heffner, Circleville, O	Resco.....		

ENTRIES AND AWARDS.

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CATTLE—RED POLL—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cows 3 years old and over.</i>			
V. T. Hills, Delaware, O.....	Chic.....	First	\$30 00
same.....	Wetrads.....	.....	.....
same.....	Cherry Ripe.....	.....	.....
J. McLain Smith, Dayton, O.....	Lady of Little Hall.....	.....	.....
same.....	Rhoda.....	Second	15 00
D. J. Heffner, Circleville, O.....	Violet.....	.....	.....
same.....	Rosomond.....	.....	.....
<i>Cows 2 years old and under 3.</i>			
V. T. Hills, Delaware, O.....	Nankin.....	.....	.....
same.....	Paragon.....	Second	15 00
same.....	Gleeful.....	First	30 00
Henry O. Morris, Circleville, O.....	Susfolk's Duchess.....	.....	.....
D. J. Heffner, Circleville, O.....	Floss.....	.....	.....
<i>Heifer 1 year old and under 2.</i>			
V. T. Hills, Delaware, Ohio.....	Chicadee.....	Second	3 00
same.....	Rose Favorite.....	First	15 00
<i>Heifer calf.</i>			
V. T. Hills, Delaware, O.....	Ultimate.....	First	10 00
same.....	Tinsel.....	Second	5 00
<i>Sweepstakes—Bull and four cows.</i>			
V. T. Hills, Delaware, O.....	.....	First	35
<i>Three cows each with her own calf.</i>			
V. T. Hills, Delaware, O.....	.....	First	35 00
J. McLain Smith, Dayton, O.....	.....	.....	.....
<i>Five animals under 2 years old.</i>			
V. T. Hills, Delaware, O.....	.....	First	35 00
<i>Cows with 2 of her own produce.</i>			
V. T. Hills, Delaware, O.....	.....	First	35 00
same.....	.....	.....	.....
J. McLain Smith, Dayton, O.....	.....	.....	.....

B. Baker, Elyria, Ohio, *Expert Judge.*

POLLED DURHAMS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Bull 3 years old and over.</i>			
John H. Miller, Mexico, Ind.....	Oliver B.....	First	\$30 00
<i>Bull 1 year old and under 2.</i>			
John H. Miller, Mexico, Ind.....	Young Hamilton.....	First	15 00
<i>Bull calf.</i>			
John H. Miller, Mexico, Ind.....	Mary's Duke.....	First	10 00

CATTLE—POLLED DURHAMS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cow 3 years old and over.</i>			
John H. Miller, Mexico, Ind.....	Ida May.....	.....	.....
same.....	Pink Rose 2d.....	Second ..	\$15 00
same.....	Mary.....	First	30 00
<i>Cow 2 years old and under 3.</i>			
John H. Miller, Mexico, Ind.....	Abbess.....	First	30 00
same.....	Maud Leslie.....	Second ..	15 00
<i>Heifer 1 year old and under 2.</i>			
John H. Miller, Mexico, Ind.....	Lavona.....	First	15 00
<i>Heifer calf.</i>			
John H. Miller, Mexico, Ind.....	Anna Crane.....	First	10 00

William Warfield, *Expert Judge.*

MILCH COWS—TEST.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Cow producing greatest amount of fat.</i>			
V. T. Hills, Delaware, O.....	Mayflower.....	First	\$30 00
Stevenson Bros., Bulger, Pa.....	Shadeland Otley.....	.....	.....
J. McLain Smith, Dayton, O.....	Lady of Tittleshall	Second ..	20 00
<i>Cow producing greatest amount of solids, including fat.</i>			
V. T. Hills, Delaware, O.....	Mayflower.....	First	30 00
Stevenson Bros., Bulger, Pa.....	Shadeland Otley.....	.....	.....
J. McLain Smith, Dayton, O.....	Lady of Tittleshall .....	.....	.....
S. Hanna & Son, Unionvale, O.....	Bracelet.....	Second ..	20 00
<i>Cow producing greatest amount of milk.</i>			
Stevenson Bros., Bulger, Pa.....	Shadeland Otley.....	First	20 00
<i>Cow producing greatest amount of milk and solids, including fat.</i>			
V. T. Hills, Delaware, O.....	Mayflower.....	First	40 00
Stevenson Bros., Bulger, Pa.....	Shadeland Otley.....	Second ..	30 00
J. McLain Smith, Dayton, O.....	Lady of Tittleshall

Committee—B. B. Herrick, J. Fremont Hickman.

ENTRIES AND AWARDS.

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CATTLE—FAT CATTLE

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Steers 2 years old and under 3.</i>			
John Savage, Elyria, O	Little John	First	\$30 00
same	Rock	Second ..	20 00
<i>Steer 1 year old and under 2.</i>			
John Savage, Elyria, O	Climax	First	30 00
<i>Steer 12 months old and under.</i>			
John Savage, Elyria, O	Sam	First	20 00
<i>Herd of fat steers.</i>			
John Savage, Elyria, O .....	.....	First....	30 00

R. Baker, Elyria, O., Expert Judge.

ENTRIES AND AWARDS.

SHEEP—MERINOS.

Owner's name and post office.	Name of animal.	Premium.	Amount.
<i>Rams 2 years old and over.</i>			
J. A. Bell, Ashley, O.....	First	\$15 00
same
Wesley Bishop, Delaware, O.....	Garfield .....	.....	.....
W. H. O. Goist, Girard, O.....
same
R. D. Williamson, Xenia, O.....
Uriah Cook, West Mansfield, O.....	Second	10 00
Sherwood Blamer, Johnston, O.....
<i>Rams 1 year old and under 2.</i>			
J. A. Bell, Ashley, O.....	Second	10 00
same
W. H. O. Goist, Girard, O.....
R. O. Williamson, Xenia, O.....	First	15 00
Uriah Cook, West Mansfield, O.....
same
Sherwood Blamer, Johnston, O.....
<i>Ram lamb.</i>			
J. A. Bell, Ashley, O.....	First	10 00
same
Wesley Bishop, Delaware, O.....
same
W. H. O. Goist, Girard, O.....
same
R. D. Williamson, Xenia, O.....
same
Uriah Cook, West Mansfield, O.....	Second	5 00
Sherwood Blamer, Johnston, O.....
<i>Pen of 2 ewes over 2 years old.</i>			
J. A. Bell, Ashley, O.....	First	12 00
Wesley Bishop, Delaware, O.....	Second	8 00
same
W. H. O. Goist, Girard, O.....
same
R. D. Williamson, Xenia, O.....
Uriah Cook, West Mansfield, O.....
same
Sherwood Blamer, Johnston, O.....
<i>Pen of 2 ewes under 2 years old.</i>			
J. A. Bell, Ashley, O.....	First	12 00
same
W. H. O. Goist, Girard, O.....
same
R. D. Williamson, Xenia, O.....	Second	8 00
Uriah Cook, West Mansfield, O.....
same
Sherwood Blamer, Johnston, O.....
<i>Pen of 2 ewe lambs.</i>			
J. A. Bell, Ashley, O.....	First	8 00
same
Wesley Bishop, Delaware, O.....	Second	4 00
same
W. H. O. Goist, Girard, O.....
same
R. D. Williamson, Xenia, O.....
same
Uriah Cook, West Mansfield, O.....
Sherwood Blamer, Johnston, O.....

J. D. Irwin, Ada, O., *Expert Judge.*

ENTRIES AND AWARDS.

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SHEEP—DELAINE MERINOS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
T. M. Paxton, McConnell's Mills, Pa.....
same
Thos. McEwen, McConnell's Mills, Pa.....	Nashy.....	Second.....	\$10 00
M. S. Gray, Parrotts O.....	Sheridan.....	First.....	15 00
R. H. Bebout, Pipeville, O.....
<i>Ram 1 year old and under 2.</i>			
E. M. Timmons, McConnell's Mills, Pa.....	First.....	15 00
same	Second.....	10 00
Thos. McEwen, McConnell's Mills, Pa.....
R. H. Bebout, Pipeville, O.....
<i>Ram lamb.</i>			
E. M. Simmons, McConnell's Mills, Pa.....	Second.....	5 00
same
Thos. McEwen, McConnell's Mills, Pa.....	First.....	10 00
same
R. H. Bebout, Pipeville, O.....
<i>Pen of 2 ewes over 2 years old.</i>			
T. M. Paxton, McConnell's Mills, Pa.....	First.....	12 00
same
Thomas McEwen, McConnell's Mills, Pa.....	Second.....	5 00
same
M. S. Gray, Parrotts, O.....	Lady Gray and Daisy.....	.....	.....
R. H. Bebout, Pipeville, O.....
<i>Pen of 2 ewes under 2 years old.</i>			
T. M. Paxton, McConnell's Mills, Pa.....	First.....	12 00
Thos. McEwen, McConnell's Mills, Pa.....
same
M. S. Gray, Parrotts, O.....	Maud and Clide.....	.....	.....
R. H. Bebout, Pipeville, O.....	Second.....	5 00
<i>Pen of 2 ewe lambs.</i>			
T. M. Paxton, McConnell's Mills, Pa.....	First.....	5 00
E. M. Simmons, McConnell's Mills, Pa.....
Thos. McEwen, McConnell's Mills, Pa.....	Second.....	4 00
R. H. Bebout, Pipeville, O.....

J. D. Irwin, Ada, O., Expert Judge.

LONG WOOLS.

[To include Lincolns, Cotswolds and Leicesters.]

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
W. B. Artz, Osborn, O.....	First.....	\$15 00
Watt & Cherry, Xenia, O.....
A. T. Harding, Corsica, O.....
John Andregg, Basil, O.....
H. Crawford & Sons, Canboro, Ontario, Canada.....	Second.....	10 00
same

SHEEP—Long Wools—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram under 2 years old.</i>			
W. S. Artz, Osborn, O.....			
Watt & Cherry, Xenia, O.....			
A. T. Harding, Corsica, O.....			
John Andregg, Basil, O.....		Second..	\$10 00
H. Crawford & Sons, Canboro, Ontario, Ca.....		First	15 00
same			
<i>Ram lamb.</i>			
W. S. Artz, Osborn, O.....			
Watt & Cherry, Xenia, O.....			5 00
A. T. Harding, Corsica, O.....		Second..	
John Andregg, Basil, O.....		First	10 00
Wm. T. & John F. Rogers, Huntsville, O.....			
H. Crawford & Sons, Canboro, Ontario, Ca.....			
same			
<i>Pen of 2 ewes over 2 years old.</i>			
W. S. Artz, Osborn, O.....		First	12 00
Watt & Cherry, Xenia, O.....		Second..	8 00
Wm. T. & John F. Rogers, Huntsville, O.....			
H. Crawford & Sons, Canboro, Ontario, Ca.....			
<i>Pen of 2 ewes under 2 years old.</i>			
W. S. Artz, Osborn, O.....			
Watt & Cherry, Xenia, O.....			
A. T. Harding, Corsica, O.....		Second..	8 00
H. Crawford & Sons, Canboro, Ontario, Ca.....		First	12 00
same			
<i>Pen of 2 ewe lambs.</i>			
W. S. Artz, Osborn, O.....			
Watt & Cherry, Xenia, O.....			
A. T. Harding, Corsica, O.....			
John Andregg, Basil, O.....			
H. Crawford & Sons, Canboro, Ontario, Ca.....			
same			

JOHN SAVAGE, Expert Judge.

OXFORDDOWNS AND HAMPSHIRE DOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
Scarff & Artz, New Carlisle, O.....		First	\$15 00
J. C. Williamson, Xenia, O.....		Second..	10 00
<i>Ram under 2 years old.</i>			
Scarff & Artz, New Carlisle, O.....		Second..	10 00
J. C. Williamson, Xenia, O.....		First	15 00
<i>Ram lamb.</i>			
Scarff & Artz, New Carlisle, O.....		Second..	5 00
J. C. Williamson, Xenia, O.....		First	10 00

SHEEP—OXFORDDOWNS AND HAMPSHIREDOWNS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pen of 2 ewes over 2 years old.</i>			
Bearff & Artz, New Carlisle, O.....	Second ..	\$8 00
J. C. Williamson, Xenia, O.....	First	12 00
<i>Pen of 2 ewes under 2 years old.</i>			
J. C. Williamson, Xenia, O.....	First	12 00
<i>Pen of 2 ewe lambs.</i>			
Bearff & Artz, New Carlisle, O.....	Second ..	4 00
J. C. Williamson, Xenia, O.....	First	8 00

SHROPSHIREDOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
L. J. Williams & Son, Muncie, Ind.....	Jumbo .....	.....	.....
J. E. Wyler, Mt. Hope, O.....	Brown's Dandy .....	.....	.....
Blake Bros., Galesburg, Mich.....	Staloes Choice.....	.....	.....
Jno. L. Thompson & Sons, Marion, Ind.....	.....	First	\$15 00
same .....	.....	Second ..	10 00
E. S. Butler & Sons, Ridgeway, O.....	.....	.....	.....
<i>Ram under 2 years old.</i>			
L. J. Williams & Son, Muncie, Ind.....	.....	.....	.....
J. E. Wyler, Mt. Hope, O.....	Mt. Hope's King.....	.....	.....
Blake Bros., Galesburg, Mich.....	Blakes, 209	Second ..	10 00
same	Blakes, 210	First	15 00
Jno. L. Thompson & Sons, Marion, Ind.....	.....	.....	.....
same .....	.....	.....	.....
<i>Ram lamb.</i>			
L. J. Williams & Son, Muncie, Ind.....	Williams, Pride.....	First	10 00
J. E. Wyler, Mt. Hope, O.....	Mt. Hope's Dandy .....	.....	.....
Blake Bros., Galesburg, Mich.....	Blakes, 214 .....	.....	.....
Jno. L. Thompson & Sons, Marion, Ind.....	.....	Second ..	5 00
same .....	.....	.....	.....
L. J. Williams & Son, Muncie, Ind.....	Baby Boy .....	.....	.....
E. S. Butler & Son, Ridgeway, O.....	.....	.....	.....
<i>Pen of 2 ewes over 2 years old.</i>			
L. J. Williams & Son, Muncie, Ind.....	.....	.....	.....
J. E. Wyler, Mt. Hope, O.....	Eunice Instone & Eby Instone .....	.....	.....
Blake Bros., Galesburg, Mich.....	Blakes, 240 and 241	First	12 00
Jno. L. Thompson & Sons, Marion, Ind.....	.....	Second ..	8 00
E. S. Butler & sons, Ridgeway, O.....	.....	.....	.....
<i>Pen of 2 ewes under 2 years old.</i>			
L. J. Williams & Son, Muncie, Ind.....	Bradus Beauty.....	Second ..	8 00
J. E. Wyler, Mt. Hope, O.....	Wylers, 448 and 449 .....	.....	.....
Blake Bros., Galesburg, Mich.....	Blakes, 242 and 243 .....	.....	.....
Jno. L. Thompson & Sons, Marion, Ind.....	.....	First	12 00
same .....	.....	.....	.....
E. S. Butler & Sons, Ridgeway, O.....	.....	.....	.....

SHEEP—SHROPSHIRE DOWNS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pen of 2 ewe lambs.</i>			
I. J. Williams & Son, Muncie, Ind.....	Wylor's Daisy, Wylor's Charm Blake's 250 and 257.....	Second ..	\$4 00
J. E. Wylor, Mt. Hope, O.....		First	8 00
Blake Bros., Galesburg, Mich.....			
Jno. L. Thompson & Sons, Marion, Ind.....			
same			

John Savage, Expert Judge.

SOUTHDOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram 2 years old and over.</i>			
C. C. Shaw & Son, Newark, O.....	Woodsides 105.....	First	\$15 00
H. H. Redkey, Sugar Tree Ridge, O.....		Second ..	10 00
W. U. Noble, Richfield, O.....			
same			
Thos. Cory, New Carlisle, O.....			
<i>Ram under 2 years old.</i>			
C. C. Shaw & Son, Newark, O.....		First	15 00
W. U. Noble, Richfield, O.....		Second ..	10 00
same			
<i>Ram lamb.</i>			
C. C. Shaw & Son, Newark, O.....			
same			
same			
H. H. Redkey, Sugar Tree Ridge, O.....		First	10 00
W. U. Noble, Richfield, O.....		Second ..	5 00
same			
<i>Pen of 2 ewes over two years old.</i>			
C. C. Shaw & Son, Newark, O.....			
H. H. Redkey, Sugar Tree Ridge, O.....			
W. U. Noble, Richfield, O.....		First	12 00
same		Second ..	8 00
Scarff & Artz, New Carlisle, O.....			
<i>Pen of 2 ewes under 2 years old.</i>			
C. C. Shaw & Son, Newark, O.....		Second ..	8 00
H. H. Redkey, Sugar Tree Ridge, O.....	Louisa 5th and Pink's Pride..	First	12 00
W. U. Noble, Richfield, O.....			
same			
<i>Pen of 2 ewe lambs.</i>			
C. C. Shaw & Son, Newark, O.....		Second ..	4 00
W. U. Noble, Richfield, O.....		First	8 00
same			

John Savage, Expert Judge.

SHEEP—SWEEPSTAKES FINE WOOLS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram with 5 of his get.</i>			
J. A. Bell, Ashley, O.....
W. H. O. Golst, Girard, O.....
Uriah Cook, West Mansfield, O.....	First	\$20 00
Sherwood Blamer, Johnston, O.....
<i>Flock of Merinos.</i>			
J. A. Bell, Ashley, O.....	First	20 00
W. H. O. Golst, Girard, O.....
Uriah Cook, West Mansfield, O.....
Sherwood Blamer, Johnston, O.....
<i>Flock of Delain Merinos.</i>			
T. M. Paxton, McConnells Mills, Pa.....	First	20 00
Thos. Mc Ewen, McConnells Mills, Pa.....

W. N. Cowden, Quaker City, O., *Expert Judge.*

SWEEPSTAKES—LONG WOOLS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram with 5 of his get.</i>			
W. S. Arts, Osborn, O.....
Watt & Cherry, Xenia, O.....
A. T. Harding, Corsica, O.....
H. Crawford & Sons, Canboro, Ontario, Canada.....	First	\$20 00
<i>Flock.</i>			
Watt & Cherry, Xenia, O.....	First	20 00
H. Crawford & Sons, Canboro, Ontario, Canada.....

Jas. A. Crawford, *Expert Judge.*

SWEEPSTAKES—SOUTHDOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram with 5 of his get.</i>			
C. C. Shaw, Newark, O.....
W. U. Noble, Richfield, O.....	First	\$20 00
<i>Flock.</i>			
W. U. Noble, Richfield, O.....	First	20 00

B. Cusick, *Expert Judge.*

SWEEPSTAKES ON OXFORDDOWNS AND HAMPSHIRE DOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram with 5 of his get.</i>			
Scarff & Arts, New Carlisle, O.....		First	\$20 00
J. C. Williamson, Xenia, O.....			

B. Cusick, Expert Judge.

SWEEPSTAKES ON SHROPSHIRE DOWNS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Ram with 5 of his get.</i>			
I. J. Williams & Son, Muncie, Ind.....		First	\$20 00
E. S. Butler & sons, Ridgeway, O.....			

B. Cusick, Expert Judge.

FAT SHEEP.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pen of 2 wethers 2 years old and over.</i>			
T. D. Postle, Alton, O.....		Second	\$5 00
Jno. Savage, Elyria, O.....		First	8 00
<i>Pen of 2 wethers 1 year old and under 2.</i>			
T. D. Postle, Alton, O.....		First	8 00
same			
John Andregg, Basil, O.....		Second	5 00
John Savage, Elyria, O.....			
<i>Pen of 2 wether lambs.</i>			
T. D. Postle, Alton, O.....		First	5 00

Jas. A. Crawford, Expert Judge.

ENTRIES AND AWARDS.

SWINE—BERKSHIRES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boars 2 years old and over.</i>			
Ike M. Wolcott, Conover, O.....	.....	Second ..	\$15 00
I. S. Riley, Thorntown, Ind.....	.....	First	20 00
D. W. Todd, Urbana, O.....	Rolla.....	.....	.....
Ike Evenson, Brighton, O.....	Charmer.....	.....	.....
<i>Boar 1 year old and under 2.</i>			
I. S. Riley, Thorntown, Ind.....	.....	First	20 00
L. C. Peterson, Spring Valley, Ind.....	.....	.....	.....
D. W. Todd, Urbana, O.....	Centennial Lad.....	.....	.....
Ike Evenson, Brighton, Ind.....	Model Prince II.....	Second ..	15 00
<i>Boar 6 months old and under 1 year.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....	.....	First	15 00
SAME	.....	.....	.....
Ike M. Wolcott, Conover, O.....	.....	.....	.....
I. S. Riley, Thorntown, Ind.....	.....	.....	.....
SAME	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	Second ..	10 00
<i>Boar under 6 months old.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....	.....	Second ..	5 00
SAME	.....	.....	.....
Ike M. Wolcott, Conover, O.....	.....	.....	.....
B. J. Poits, Andrews, O.....	.....	First	10 00
SAME	.....	.....	.....
I. S. Riley, Thorntown, Ind.....	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
D. W. Todd, Urbana, O.....	Wildwood Chief.....	.....	.....
Ike Evenson, Brighton, O.....	.....	.....	.....
<i>Sows 2 years old and over.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....	Queen.....	First	20 00
Ike M. Wolcott, Conover, O.....	.....	.....	.....
I. S. Riley, Thorntown, Ind.....	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	.....	.....
D. W. Todd, Urbana, O.....	Ohio Beauty.....	.....	.....
Ike Evenson, Brighton, O.....	Plush	Second ..	10 00
<i>Sow 1 year old and under 2.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....	Queen.....	.....	.....
Ike M. Wolcott, Conover, O.....	.....	.....	.....
I. S. Riley, Thorntown, Ind.....	.....	First	15 00
SAME	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	Second ..	10 00
<i>Sow 6 months old and under 1 year.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....	.....	.....	.....
L. C. Peterson, Spring Valley, O.....	.....	Second ..	8 00
SAME	.....	.....	.....
Ike Evenson, Brighton, O.....	.....	First	12 00

SWINE—BERKSHIRES—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Sows under 6 months old.</i>			
Geo. L. & O. P. Wolcott, Conover, O
same
R. J. Potts, Andrews, O
I. S. Riley, Thorntown, Ind	First	\$20 00
D. W. Todd, Urbana, O	Lady Morehead .....	.....	.....
Ike Everson, Brighton, O
Ike M. Wolcott, Conover, O	Second	5 00

I. N. Barker, Expert Judge.

*POLAND CHINAS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boar 2 years old and over.</i>			
Robinson & Steeley, Piqua, O .....	.....	Second	\$15 00
Duffield & Lamm, Somerville, O .....	.....	.....	.....
Wm. T. and John F. Rogers, Huntsville, O	Rich Blood .....	.....	.....
Crawford & Lackey, Xenia, O	Square Business	First	20 00
Bundshuh Bros., Fremont, O	Bebout's Adam .....	.....	.....
<i>Boar one year old and under 2.</i>			
Fred K. Kolb, Millersburg, O	Seldom Better .....	.....	.....
A. H. Mather, Wilmington, O	King Quality .....	.....	.....
Robinson & Steeley, Piqua, O .....	.....	First	20 00
Duffield & Lamm, Somerville, O .....	.....	Second	15 00
same	Kleaver Boy .....	.....	.....
G. W. Brown, Mt. Gilead, O .....	.....	.....	.....
C. W. Haines, Centerville, O	Ohio King, Jr. ....	.....	.....
Frank Wagner, Shaucks, O .....	.....	.....	.....
<i>Boar six months old and under 1 year.</i>			
A. H. Mather, Wilmington, O	U. S., Jr. ....	.....	.....
Robinson & Steeley, Piqua, O .....	.....	Second	10 00
Duffield & Lamm, Somerville, O .....	.....	First	15 00
G. N. Brown, Mt. Gilead, O .....	.....	.....	.....
Wm. T. and Jno. F. Rogers, Huntsville, O	Sir Kellogg .....	.....	.....
H. Bradford, Rochester, O .....	.....	.....	.....
Bundshuh Bros., Fremont, O .....	.....	.....	.....
C. W. Haines, Centerville, O .....	.....	.....	.....
Bundshuh Bros., Fremont, O .....	.....	.....	.....
<i>Boar under six months old.</i>			
Fred K. Kolb, Millersburg, O .....	.....	.....	.....
A. H. Mather, Wilmington, O .....	.....	.....	.....
same .....	.....	.....	.....
Duffield & Lamm, Somerville, O .....	.....	First	10 00
Wm. T. & John F. Rogers, Huntsville, O	Rich Blood's Spot .....	.....	.....
Crawford and Lackey, Xenia, O .....	.....	Second	5 00
Mell Parrott, Mt. Gilead, O .....	.....	.....	.....
same .....	.....	.....	.....
H. Bradford, Rochester, O .....	.....	.....	.....
Bundshuh Bros., Fremont, O .....	.....	.....	.....
same .....	.....	.....	.....
C. W. Haines, Centerville, O .....	.....	.....	.....
Frank Wagner, Shaucks, O	Jim Dandy .....	.....	.....
<i>Sow 2 years old and over.</i>			
Duffield & Lamm, Somerville, O .....	.....	Second	10 00
G. W. Brown, Mt. Gilead, O	Kolb's Choice .....	.....	.....
C. W. Haines, Centerville, O .....	.....	First	20 00
Frank Wagner, Shaucks, O	Lady Bruce .....	.....	.....

SWINE—POLAND CHINAS—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Sow 1 year old and under 2.</i>			
Fred. K. Kolb, Millersburgh, O.....	Irene K.....		
A. H. Mather, Wilmington, O.....	Sal Fox 5th.....		
Duffield & Lamm, Somerville, O.....		First.....	\$15 00
same.....		Second.....	10 00
Wm. T. & John F. Rogers, Huntsville, O.....	Rich Blood's Spot.....		
Bundschuh Bros., Fremont, O.....	Nelly Bly.....		
same.....			
C. W. Haines, Centerville, O.....			
same.....			
Frank Wagner, Shaucks, O.....	Sweepstakes' Bow.....		
<i>Sow 6 months old and under 1 year.</i>			
Fred. K. Kolb, Millersburgh, O.....	Kolb's Pride.....		
same.....	Beauty.....		
Robinson & Steeley, Piqua, O.....		First.....	12 00
Duffield & Lamm, Somerville, O.....		Second.....	8 00
Wm. T. & John F. Rogers, Huntsville, O.....	Miss Kellogg.....		
H. Bradford, Rochester, O.....			
Bundschuh Bros., Fremont, O.....			
same.....			
C. W. Haines, Centerville, O.....	Lady B.....		
Frank Wagner, Shaucks, O.....			
<i>Sow under 6 months old.</i>			
Fred. K. Kolb, Millersburgh, O.....	First Choice.....		
same.....	Lady K. 2d.....		
A. H. Mather, Wilmington, O.....			
same.....			
Duffield & Lamm, Somerville, O.....			
G. W. Brown, Mt. Gilead, O.....		First.....	10 00
same.....		Second.....	5 00
Wm. T. & John F. Rogers, Huntsville, O.....			
Mell Parrott, Mt. Gilead, O.....			
H. Bradford, Rochester, O.....			
Bundschuh Bros., Fremont, O.....			
same.....			
C. W. Haines, Centerville, O.....			
Frank Wagner, Shaucks, O.....	Rose.....		

W. G. Hankinson, Expert Judge.

CHESTER WHITES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boar 2 years old and over.</i>			
L. H. Martin, Alexandria, O.....	Alert.....	First.....	\$20 00
C. H. Gregg, Krumroy, O.....	National.....	Second.....	15 00
D. A. Lane, Commercial Point, O.....	Scioto Pride.....		
<i>Boar 1 year old and under 2.</i>			
L. H. Martin, Alexandria, O.....	Tip Toe.....	First.....	20 00
<i>Boar 6 months old and under 1 year.</i>			
L. H. Martin, Alexandria, O.....	Judge.....	First.....	15 00
J. L. Haskins, Wakeman, O.....	National.....	Second.....	10 00
C. H. Gregg, Krumroy, O.....			

SWINE—CHESTER WHITES—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boar under 6 months old.</i>			
L. H. Martin, Alexandria, O.....	Tip Toes, 2d	First	\$10 00
same	Mark	second	5 00
J. L. Haskins, Wakeman, O.....			
same	National		
C. H. Gregg, Krumroy, O.....			
<i>Sow 2 years old and over.</i>			
L. H. Martin, Alexandria, O.....	Fern	First	20 00
C. H. Gregg, Krumroy, O.....	Mace	second	10 00
<i>Sow 1 year old and under 2.</i>			
J. L. Haskins, Wakeman, O.....		Second	10 00
C. H. Gregg, Krumroy, O.....		First	15 00
<i>Sow 6 months old and under 1 year.</i>			
L. H. Martin, Alexandria, O.....	Blossom	First	12 00
C. H. Gregg, Krumroy, O.....	Mace	Second	8 00
same			
<i>Sow under 6 months old.</i>			
L. H. Martin, Alexandria, O.....	Lady Fern	Second	5 00
J. L. Haskins, Wakeman, O.....		First	10 00
same			
C. H. Gregg, Krumroy, O.....	Mace		
same			

W. C. HANKINSON, Expert Judge.

SUFFOLK, YORKSHIRE AND VICTORIA BREEDS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boar 1 year old and over.</i>			
A. C. Green, Winchester, Ind.....		First	\$15 00
same		Second	10 00
Chas. McClave, New London, O.....			
same			
<i>Boar under 1 year old.</i>			
A. C. Green, Winchester, Ind.....		Second	10 00
same		First	15 00
Chas. McClave, New London, O.....			
same			
<i>Sow 1 year old and over.</i>			
A. C. Green, Winchester, Ind.....		First	15 00
same		Second	10 00
Chas. McClave, New London, O.....			
same			
<i>Sow under 1 year old.</i>			
A. C. Green, Winchester, Ind.....		Second	10 00
same		First	15 00
Chas. McClave, New London, O.....			
same			

W. C. HANKINSON, Expert Judge.

SWINE—Essex.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Boars 1 year old and over.</i>			
A. C. Green, Winchester, Ind.....	First	\$15 00
same	Second	10 00
<i>Boars under 1 year old.</i>			
A. C. Green, Winchester, Ind.....	First	15 00
same	Second	10 00
<i>Sows 1 year old and over.</i>			
A. C. Green, Winchester, Ind.....	First	15 00
same	Second	10 00
<i>Sows under 1 year old.</i>			
A. C. Green, Winchester, Ind.....	Second	10 00
same	First	15 00

I. N. Barker, Expert Judge.

DUROC JERSEYS.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
Boars 1 year old and over.			
Bell & Reid, New Paris, O..... NAME	Ohio Foy..... Rock Bottom.....	First	\$15 00
B. E. Morton, Camden, O..... SAME	Champion Wonder..... Nelson	Second ..	10 00
Boars under 1 year old.			
Bell & Reid, New Paris, O..... NAME	.....	First	15 00
B. E. Morton, Camden, O..... SAME	.....	second ..	10 00
Sows 1 year old and over.			
Bell & Reid, New Paris, O..... NAME	Nettie R..... Alma	First	15 00
B. E. Morton, Camden, O..... SAME	Duchess II..... Morton's 1 x L.....			Second ..	10 00
Sows under 1 year old.			
Bell & Reid, New Paris, O..... NAME	.....	Second ..	10 00
B. E. Morton, Camden, O..... SAME	Modesty.....	First	15 00

I. N. Barker, Expert Judge.

SWINE—SWEEPSTAKES.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Berkshire boar of any age.</i>			
J. S. Riley, Greenville, O.....		First	\$10 00
Ike Everson, Brighton, O.....			
<i>Berkshire sow of any age.</i>			
Geo. L. & O. P. Wolcott, Conover, O.....			
Ike M. Wolcott, Conover, O.....			
Geo. Riley, Greenville, O.....		First	10 00
L. C. Peterson, Spring Valley, O.....			
Ike Everson, Brighton, O.....			
<i>Poland China boar of any age.</i>			
Fred K. Kolb, Millersburg, O.....	King Quality		
A. H. Mather, Wilmington, O.....			
Robinson & Steele, Piqua, O.....		First	10 00
Duffield & Lamm, Somerville, O.....			
Crawford & Lackey, Xenia, O.....	Rich Blood		
Wm. T. & John F. Rogers, Huntsville, O.....	Bebout's Adam		
Bundshuh Bros., Fremont, O.....			
C. W. Haines, Centerville, O.....			
<i>Poland China Sow of any age.</i>			
Fred K. Kolb, Millersburg, O.....			
Robinson & Steele, Piqua, O.....		First	10 00
Duffield & Lamm, Somerville, O.....			
A. H. Mather, Wilmington, O.....			
Wm. T. & John F. Rogers, Huntsville, O.....	Nelly Bly.....		
Bundshuh Bros., Fremont, O.....			
C. W. Haines, Centerville, O.....			
<i>Chester White boar of any age.</i>			
L. H. Martin, Alexandria, O.....	Alert.....	First	10 00
C. H. Gregg, Krumroy, O.....	National		
<i>Chester White sow of any age.</i>			
L. H. Martin, Alexandria, O.....	Fern	First	10 00
J. L. Haskins, Wakeman, O.....	Mace		
C. H. Gregg, Krumroy, O.....			
<i>Duroc Jersey boar of any age.</i>			
S. E. Morton, Camden, O.....			
same			
Bell & Reid, New Paris, O.....		First	10 00
<i>Duroc Jersey sow of any age.</i>			
S. E. Morton, Camden, O.....		First	10 00
same			
Bell & Reid, New Paris, O.....			

H. S. Persing, G. F. Jobe, C. R. Betts, *Expert Judges.*

BREEDER'S RING.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pen of 5 pigs under 6 months.</i>			
J. L. Haskins, Wakeman, O.....			
Fred K. Kolb, Millersburg, O.....			
A. H. Mather, Wilmington, O.....			

SWINE—BREEDER'S RING—Concluded.

Owner's name and post-office.	Name of animal.	Premium.	Amount.
<i>Pen of 5 pigs under 6 months—Concluded.</i>			
G. W. Brown, Mt. Gilead, O.....	First	\$15 00
Wm. T. and John F. Rogers, Huntsville, O.....	Second	10 00
Mell Parrott, Mt. Gilead, O.....		
A. Bradford, Rochester, O.....		
Bundahub Bros., Fremont, O.....		
G. W. Haines, Centerville, O.....		
Frank Wagner, Shaucks, O.....		
C. H. Gregg, Krumroy, Ohio.....		
<i>Herd of 1 boar and 4 sows.</i>			
Buffield & Lamm, Somerville, O.....	First	20 00
C. W. Haines, Centerville, O.....	Second	15 00
<i>Herd of 5 head of swine any age.</i>			
G. W. Brown, Mt. Gilead, O.....	First	20 00
Bundahub Bros., Fremont, O.....	Second	15 00
C. W. Haines, Centerville, O.....		

C. B. Betts, H. S. Persing, G. F. Jobe, *Expert Judges.*

AWARDS.

POULTRY—BARRED PLYMOUTH ROCK.

Owner's name and post-office.	Kind of fowl.	Premium.
Mrs. H. A. Bridge, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
same.....	Best cockerel.....	1 00
same.....	2d ".....	50
same.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Mrs. H. A. Bridge, Columbus, O.....	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

WHITE PLYMOUTH ROCK.

Owner's name and post-office.	Kind of fowl.	Premium.
M. M. Barger, Mt. Gilead, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Mrs. H. A. Bridge, Columbus, O.....	Best cockerel.....	1 00
M. M. Barger, Mt. Gilead, O.....	2d ".....	50
same.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Mrs. H. A. Bridge, Columbus, O.....	Best pullet.....	1 00
same.....	2d ".....	50

WHITE WYANDOTTE.

Owner's name and post-office.	Kind of fowl.	Premium.
J. M. Yoder, Millersburgh, O.....	Best cock.....	\$1 00
Chas. McClave, New London, O.....	2d ".....	50
same.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best hen.....	1 00
J. M. Yoder, Millersburgh, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—BLACK JAVA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50
Mel Parrott, Mt. Gilead, O.....	Best cockerel	1 00
Chas. McClave, New London, O.....	2d "	50
Mel Parrott, Mt. Gilead, O.....	Best hen	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50
Mel Parrott, Mt. Gilead, O.....	Best pullet	1 00
Chas. McClave, New London, O.....	2d "	50

MOTTLED JAVA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock	\$1 00
same	2d "	50
same	Best cockerel	1 00
Bush Bros., Seldon, O.....	Best hen	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50
same	Best pullet	1 00

SILVER WYANDOTTE.

Owner's name and post-office.	Kind of fowl.	Premium.
Bush Bros., Seldon, O.....	Best cock	\$1 00
Geo. Dumbaugh, Mt. Gilead, O.....	2d "	50
Chas. McClave, New London, O.....	Best cockerel	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50
Chas. McClave, New London, O.....	Best hen	1 00
Bush Bros., Seldon, O.....	2d "	50
Chas. McClave, New London, O.....	Best pullet	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50

GOLDEN WYANDOTTE.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock	\$1 00
same	" cockerel	1 00
same	" hen	1 00
same	" pullet	1 00

POULTRY—WHITE JAVA.

Owner's name and post-office.	Kind of fowl.	Premium.
Geo. Dumbaugh, Mt. Gilead, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
same.....	Best cockerel.....	1 00
Chas. McClave, New London, O.....	2d ".....	50
Geo. Dumbaugh, Mt. Gilead, O.....	Best hen.....	1 00
same.....	2d ".....	50
same.....	Best pullet.....	1 00
same.....	2d ".....	50

DOMINIQUE.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Chas. McClave, New London, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
Chas. McClave, New London, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best pullet.....	1 00

DARK BRAHMA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
M. F. Lee, Columbus, O.....	Best cockerel.....	1 00
Chas. McClave, New London, O.....	2d ".....	50
M. F. Lee, Columbus, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
M. F. Lee, Columbus, O.....	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

BUFF COCHIN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best hen.....	1 00
same.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—LIGHT BRAHMA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
M. F. Lee, Columbus, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
John Salmon, Madison Mills,	2d ".....	50
M. F. Lee, Columbus,	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best pullet.....	1 00
John Salmon, Madison Mills, O.....	2d ".....	50

PARTRIDGE COCHIN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. E. Kramer, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
M. F. Lee, Columbus, O.....	2d ".....	50
Chas. E. Kramer, Columbus, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. E. Kramer, Columbus, O.....	Best pullet.....	1 00
M. F. Lee, Columbus, O.....	2d ".....	50

WHITE COCHIN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
Bush Bros., Seldon, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best hen.....	1 00
same.....	2d ".....	50
Bush Bros., Seldon, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

BLACK COCHIN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Bush Bros., Seldon, O.....	2d ".....	50
J. M. Yoder, Millersburg, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Bush Bros., Seldon, O.....	Best hen.....	1 00
W. O. Shellenberger, Pleasantville, O.....	2d ".....	50
J. M. Yoder, Millersburg, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—LANGSHAN.

Owner's name and post-office.	Kind of fowl.	Premium.
John Salmon, Madison Mills, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best hen.....	1 00
John Salmon, Madison Mills, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

S. C. BROWN LEGHORN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
M. M. Barger, Mt. Gilead, O.....	Best hen.....	1 00
Chas. McClave, New London, O.....	2d ".....	50
M. M. Barger, Mt. Gilead, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

R. C. BROWN LEGHORN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	50
same.....	Best cockerel.....	1 00
same.....	2d ".....	50
same.....	Best hen.....	1 00
same.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

S. C. WHITE LEGHORN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Thos. Cory, New Carlisle, O.....	2d ".....	50
John Salmon, Madison Mills, O.....	Best cockerel.....	1 00
Geo. Dumbaugh, Mt. Gilead, O.....	2d ".....	50
Mel. Parrott, Mt. Gilead, O.....	Best hen.....	1 00
M. M. Barger, Mt. Gilead, O.....	2d ".....	50
Geo. Dumbaugh, Mt. Gilead, O.....	Best pullet.....	1 00
Thos. Cory, New Carlisle, O.....	2d ".....	50

POULTRY—R. C. WHITE LEGHORN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
E. N. Boyle, Mt. Gilead, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
same.....	2d ".....	50
E. N. Boyle, Mt. Gilead, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

ANDALUSIAN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
W. Shellenbarger, Pleasantville, O.....	2d ".....	50
Bush Bros., Selden, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best hen.....	1 00
M. M. Barger, Mt. Gilead, O.....	2d ".....	50
Bush Bros., Selden, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

BLACK LEGHORN.

Owner's name and post-office.	Kind of fowl.	Premium.
W. Shellenbarger, Pleasantville, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best cockerel.....	1 00
same.....	2d ".....	50
same.....	Best hen.....	1 00
same.....	2d ".....	50
same.....	Best pullet.....	1 00
same.....	2d ".....	50

BLACK MINORCA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Thos. Cory, New Carlisle, O.....	2d ".....	50
E. N. Boyle, Mt. Gilead, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Bush Bros., Selden, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
E. N. Boyle, Mt. Gilead, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—WHITE MINORCA.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d "	1 00
same	Best cockerel.....	1 00
M. M. Barger, Mt. Gilead, O.....	2d "	1 00
Chas. McClave, New London, O.....	Best hen	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	1 00
same	Best pullet.....	1 00
M. M. Barger, Mt. Gilead, O.....	2d "	50

BLACK SPANISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock	\$1 00
Chas. McClave, New London, O.....	2d "	1 00
same	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	1 00
same	Best hen	1 00
Chas. McClave, New London, O.....	2d "	1 00
same	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50

W. C. BLACK POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d "	1 00
M. M. Barger, Mt. Gilead, O.....	Best cockerel.....	1 00
same	2d "	1 00
Chas. Gammerdinger, Columbus, O.....	Best hen	1 00
M. M. Barger, Mt. Gilead, O.....	2d "	1 00
same	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d "	50

SILVER POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same	" cockerel.....	1 00
same	" hen	1 00
same	2d "	50
same	Best pullet.....	1 00

POULTRY—WHITE POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

BEARDED GOLDEN POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same	2d ".....	50
same	Best cockerel.....	1 00
same	2d ".....	50
same	Best hen.....	1 00
same	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

GOLDEN POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
J. Cole, Berkshire, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
same	2d ".....	50
J. Cole, Berkshire, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

BEARDED SILVER POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Bush Bros., Seldon, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
Chas. McClave, New London, O.....	2d ".....	50
same	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

POULTRY—BEARDED WHITE POLISH.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	1 50
same.....	Best cockerel.....	1 00
same.....	Best hen.....	1 00
same.....	2d ".....	1 50
same.....	Best pullet.....	1 00

GOLDEN SPANGLED HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
W. Shallenbarger, Pleasantville, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 50
same.....	Best cockerel.....	1 00
same.....	Best hen.....	1 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 50
Chas. Gammerdinger, Columbus, O.....	Best pullet.....	1 00

SILVER SPANGLED HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
J. M. Yoder, Millersburg, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 50
same.....	Best cockerel.....	1 00
John Salmon, Madison Mills, O.....	2d ".....	1 50
Chas. Gammerdinger, Columbus, O.....	Best hen.....	1 00
same.....	2d ".....	1 50
John Salmon, Madison Mills, O.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

GOLDEN PENCILED HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
J. M. Yoder, Millersburg, O.....	2d ".....	1 50
M. M. Barger, Mt. Gilead, O.....	Best cockerel.....	1 00
Chas. McClave, New London, O.....	2d ".....	1 50
same.....	Best hen.....	1 00
J. M. Yoder, Millersburg, O.....	2d ".....	1 50
M. M. Barger, Mt. Gilead, O.....	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

POULTRY—HOUDAN.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same	Best cockerel.....	1 00
same	2d ".....	50
Chas. McClave, New London, O.....	Best hen.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

CREVECOEUR.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same	2d ".....	50
same	Best cockerel.....	1 00
same	2d ".....	50
same	Best hen.....	1 00
same	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

LA FLECHE.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same	" cockerel.....	1 00
same	Best hen.....	1 00
same	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

COLORED DORKING.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same	Best cockerel.....	1 00
same	2d ".....	50
same	Best hen.....	1 00
same	2d ".....	50
same	Best pullet.....	1 00
same	2d ".....	50

POULTRY—SILVER PENCILED HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	2d ".....	1 50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	" hen.....	1 00
Chas. McClave, New London, O.....	" pullet.....	1 00

WHITE HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	" hen.....	1 00

BLACK HAMBURG.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	" cockerel.....	1 50
same.....	" hen.....	1 00
same.....	" pullet.....	1 00

RED CAP.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 50
same.....	Best hen.....	1 00
Chas. McClave, New London, O.....	2d ".....	1 50
same.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—BLACK-BREADED RED GAME.

Owner's name and post-office.	Kind of fowl.	Premium.
J. M. Yoder, Millersburg, O.....	Best cock.....	\$1 00
Chas. Lindsey, Madison Mills, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best cockerel.....	1 00
J. M. Yoder, Millersburg, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best hen.....	1 00
Chas. Lindsey, Madison Mills, O.....	2d ".....	50
Chas. McClave, New London, O.....	Best pullet.....	1 00
same.....	2d ".....	50

SUMATRA GAME.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
same.....	" cockerel.....	1 00
same.....	Best hen.....	1 00
same.....	2d ".....	50
same.....	Best pullet.....	1 00

BLACK-BREADED RED GAME BANTAM.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Chas. McClave, New London, O.....	2d ".....	50
same.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best hen.....	1 00
Chas. McClave, New London, O.....	2d ".....	50
Chas. Gammerdinger, Columbus, O.....	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

GOLDEN SEBRIGHT BANTAM.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Thos. Cory, New Carlisle, O.....	2d ".....	50
same.....	Best cockerel.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50
same.....	Best hen.....	1 00
Thos. Cory, New Carlisle, O.....	2d ".....	50
same.....	Best pullet.....	1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	50

POULTRY—SILVER SEBRIGHT BANTAM.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Best cock.....	\$1 00
Chas. E. Kramer, Columbus, O.....	2d ".....	1 50
Chas. McClave, New London, O.....	Best cockerel.....	1 50
Chas. E. Kramer, Columbus, O.....	2d ".....	1 50
Chas. Gammerdinger, Columbus, O.....	Best hen.....	1 00
Chas. E. Kramer, Columbus, O.....	2d ".....	1 50
same.....	Best pullet.....	1 50
same.....	2d ".....	50

PEKIN OR COCHIN BANTAM.

Owner's name and post-office.	Kind of fowl.	Premium.
D. M. Alexander, Westerville, O.....	Best cock.....	\$1 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 50
Chas. McClave, New London, O.....	Best cockerel.....	1 00
D. M. Alexander, Westerville, O.....	2d ".....	1 50
Chas. Gammerdinger, Columbus, O.....	Best hen.....	1 00
D. M. Alexander, Westerville, O.....	Best pullet.....	1 00
Chas. McClave, New London, O.....	2d ".....	50

TURKEYS.

Owner's name and post-office.	Kind of fowl.	Premium.
H. H. Bedkey, Sugar Tree Ridge, O.....	Best bronze, old pair.....	\$3 00
John Salmon, Madison Mills, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best bronze, young pair.....	3 00
John Salmon, Madison Mills, O.....	2d ".....	1 00
Bush Bros., Selden, O.....	Best white, old.....	3 00
Chas. McClave, New London, O.....	2d ".....	1 00
same.....	Best black, old.....	3 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best black, young.....	3 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00
M. M. Barger, Mt. Gilead, O.....	Best slate, old.....	3 00
J. Cole, Berkshire, O.....	2d ".....	1 00
M. M. Barger, Mt. Gilead, O.....	Best slate, young.....	3 00
W. Shallenbarger, Pleasantville, O.....	2d.....	1 00

DUCKS.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best Pekin, old pair.....	\$2 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00
Mel Parrott, Mt. Gilead, O.....	Best Pekin, young pair.....	2 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00
same.....	Best Aylesbury, old pair.....	2 00

POULTRY—DUCKS—Concluded.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	2d best Aylesbury, old pair.....	\$1 00
O. Lindsey, Madison Mills, O.....	Best Aylesbury, young pair.....	2 00
Chas. McClave, New London, O.....	2d ".....	1 00
W. Shallenbarger, Pleasantville, O.....	Best Rouen, old pair.....	2 00
C. Lindsey, Madison Mills, O.....	2d ".....	1 00
Chas. Gammerdinger, Columbus, O.....	Best Rouen, young pair.....	2 00
Chas. McClave, New London, O.....	2d ".....	1 00
same	Best Cayuga, old pair.....	2 00
C. Lindsey, Madison Mills, O.....	2d ".....	1 00
same	Best Cayuga, young pair.....	2 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best crested white, old pair.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 00
Thos. Cory, New Carlisle, O.....	Best crested white, young pair.....	2 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best Call, old pair.....	2 00
O. Lindsey, Madison Mills, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best Call, young pair.....	2 00
C. Lindsey, Madison Mills, O.....	Best Muscovy, old pair.....	2 00
Chas. McClave, New London, O.....	2d ".....	1 00
W. Shallenbarger, Pleasantville, O.....	Best Muscovy, young pair.....	2 00
C. Lindsey, Madison Mills, O.....	2d ".....	1 00

GESE.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. McClave, New London, O.....	Best Toulouse, old pair.....	\$3 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best Toulouse, young pair.....	3 00
same	Best Embden, old pair.....	3 00
J. Cole, Berkshire, O.....	2d ".....	1 00
Chas. McClave, New London, O.....	Best Embden, young pair.....	3 00
Chas. Gammerdinger, Columbus, O.....	2d ".....	1 00
same	Best brown Chinese, old pair.....	3 00
W. Shallenbarger, Pleasantville, O.....	Best " young pair.....	3 00
C. Lindsey, Madison Mills, O.....	Best white, old pair.....	3 00
Bush Bros., Seldon, O.....	2d ".....	1 00
Chas. Gammerdinger, Columbus, O.....	Best white, young pair.....	3 00
W. Shallenbarger, Pleasantville, O.....	2d ".....	1 00

PIGEONS.

Owner's name and post-office.	Kind of fowl.	Premium.
C. W. Buttles, Columbus, O.....	Best collection, five varieties.....	\$10 00
Jas. Lee Bridge, Columbus, O.....	2d ".....	5 00

POULTRY—CLASS COLLECTIONS.

Owner's name and post-office.	Kind of fowl.	Premium.
Chas. Gammerdinger, Columbus, O.....	Finest collection American.....	\$5 00
same	" Asiatic.....	5 00
same	" Mediterranean.....	5 00
same	" Polish.....	2 00
same	" Hamburg	2 00
Chas. McClave, New London, O.....	" turkeys.....	5 00
same	" water fowls.....	5 00
G. S. Singer, Cardington, O.....	Best incubator and breeder	Medal.

GRAIN, SEEDS AND CEREAL MILL PRODUCTS.

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FARM PRODUCTS—CORN, ETC.

Owner's name and post-office.	Name of article.	Premium.
Whipps Bros., Marion, O.....	Best display yellow corn	\$10 00
J. L. Keckley, Marysville, O	2d	5 00
same	Best display white corn	10 00
Whipps Bros., Marion, O.....	2d	5 00
same	Best display sweet corn	5 00
J. L. Keckley, Marysville, O	2d	2 00
same	Best display of pop corn	5 00
J. L. Anderson, Westerville, O.....	2d	2 00
Whipps Bros., Marion, O.....	Best collection corn in variety.....	8 00
J. L. Keckley, Marysville, O	2d	3 00
Whipps Bros., Marion, O	Best white corn meal.....	2 00
H. Bookwalter, Hallsville, O.....	2d	1 00
same	Best yellow corn meal.....	2 00
same	Best hominy.....	2 00
same	Best fine hominy or samp.....	2 00
Mrs. A. L. Perry, Lewis Center, O.....	Best dried corn	2 00
Laura Evers, Dodds, O	2d	1 00
Whipps Bros., Marion, O	Best 20 pounds broom corn	2 00
H. Bookwalter, Hallsville, O.....	2d	1 00

CHEESE AND BUTTER.

Owner's name and post-office.	Name of article.	Premium.
H. Bookwalter, Hallsville, O.....	Best package dairy butter.....	\$5 00
same	Best exhibition dairy butter.....	10 00
Mary S. Maxwell, Reynoldsburg, O.....	2d best	5 00

POTATOES AND OTHER ROOT PRODUCTS.

Owner's name and post-office.	Name of article.	Premium.
Whipps Bros., Marion, O.....	Best Late Rose.....	\$2 00
David Heckman, Weston, O	2d	1 00
Louis Swickard, Westerville, O.....	Best Early Rose.....	2 00
J. L. Keckley, Marysville, O.....	2d	1 00
Whipps Bros., Marion, O.....	Best White Elephant.....	2 00
J. L. Keckley, Marysville, O	2d	1 00
J. Reinhart, Marysville, O.....	Best Mammoth Pearl.....	2 00
Whipps Bros., Marion, O.....	2d	1 00
same	Best Beauty of Hebron.....	2 00
J. L. Keckley, Marysville, O	2d	1 00
same	Best Clark's No. 1.....	2 00
Whipps Bros., Marion, O.....	2d	1 00
J. L. Keckley, Marysville, O	Best White Star.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d	1 00
Whipps Bros., Marion, O.....	Best Chicago Market	2 00
E. S. Tussing, Canal Winchester, O.....	2d	1 00
Whipps Bros., Marion, Ohio.....	Best Burbank Seedling	2 00
J. L. Keckley, Marysville, O.....	2d	1 00
same	Best Seneca Beauty.....	2 00
Whipps Bros., Marion, O.....	2d	1 00
J. L. Keckley, Marysville, O	Best Potentate.....	2 00
Whipps Bros., Marion, O.....	2d	1 00

FARM PRODUCTS—POTATOES AND OTHER ROOT PRODUCTS—Concluded.

Owner's name and post-office.	Name of article	Premium.
J. L. Anderson, Westerville, O.....	Best Early Ohio.....	\$2 00
Whipps Bros., Marion, O.....	2d.....	1 00
J. L. Keckley, Marysville, O.....	Best Late Ohio.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d.....	1 00
J. L. Keckley, Marysville, O.....	Best Green Mountain.....	2 00
Whipps Bros., Marion, O.....	2d.....	2 00
same.....	Best Lee's Favorite.....	1 00
David Heckman, Weston, O.....	Best Pride of the Valley.....	2 00
J. L. Keckley, Marysville, O.....	2d.....	1 00
same.....	Best Sunrise.....	2 00
G. N. Toops, Chillicothe, O.....	2d.....	1 00
J. Reinhardt, Marysville, O.....	Best Blue Victor.....	2 00
W. D. Boyer, Mason, O.....	2d.....	1 00
Whipps Bros., Marion, O.....	Best Vanguard.....	2 00
H. Boese, Delaware, O.....	2d.....	1 00
Whipps Bros., Marion, O.....	Best Delaware.....	2 00
J. L. Keckley, Marysville, O.....	2d.....	1 00
same.....	Best Vick's Perfection.....	2 00
Whipps Bros., Marion, O.....	2d.....	1 00
same.....	Best Ohio Junior.....	2 00
J. L. Keckley, Marysville, O.....	2d.....	1 00
same.....	Best Early Maine.....	2 00
Whipps Bros., Marion, O.....	Best Early Sunrise.....	2 00
J. L. Keckley, Marysville, O.....	2d.....	1 00
Whipps Bros., Marion, O.....	Best new variety.....	8 00
H. Boese, Delaware, O.....	2d.....	2 00
Levi Bowman, Wellington, O.....	Best display seedlings.....	8 00
J. L. Keckley, Marysville, O.....	Best display Irish potatoes.....	10 00
Whipps Bros., Marion, O.....	2d.....	5 00
E. S. Tussing, Canal Winchester, O.....	Best yellow sweet.....	2 00
David Heckman, Weston, O.....	2d.....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display sweet potatoes.....	3 00
Lewis Swickard, Westerville, O.....	2d.....	2 00
Whipps Bros., Marion, O.....	Best 12 parsnips.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d.....	1 00
Lewis Swickard, Westerville, O.....	Best 12 salsify.....	2 00
Whipps Bros., Marion, O.....	2d.....	1 00
same.....	Best 12 Danver's carrots.....	2 00
Thos. Crofts, East Toledo, O.....	2d.....	1 00
Whipps Bros., Marion, O.....	Best long orange carrots.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d.....	1 00
Thos. Crofts, East Toledo, O.....	Best display carrots.....	8 00
Whipps Bros., Marion, O.....	2d.....	2 00
C. V. Jones, Chillicothe, O.....	Best 6 Kal Rabb.....	2 00
Whipps Bros., Marion, O.....	2d.....	1 00
same.....	Best long blood beets.....	2 00
Lewis Swickard, Westerville, O.....	2d.....	1 00
Thos. Crofts, East Toledo, O.....	Best turnip beets.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d.....	1 00
Thos. Crofts, East Toledo, O.....	Best red mangel-wurzel.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d.....	1 00
C. V. Jones, Chillicothe, O.....	Best yellow mangel-wurzel.....	2 00
Black's nursery, Bremen, O.....	2d.....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display mangel-wurzel.....	8 00
Lewis Swickard, Westerville, O.....	2d.....	2 00
same.....	Best " beets.....	8 00
Whipps Bros., Marion, O.....	2d.....	1 00
E. S. Tussing, Canal Winchester, O.....	Best 12 turnips.....	2 00
Thos. Crofts, East Toledo, O.....	2d.....	1 00
same.....	Best red onions.....	2 00
David Heckman, Weston, O.....	2d.....	1 00
Thos. Crofts, East Toledo, O.....	Best white onions.....	2 00
David Heckman, Weston, O.....	2d.....	1 00
same.....	Best potato onions.....	2 00
Thos. Crofts, East Toledo, O.....	2d.....	1 00
J. L. Keckley, Marysville, O.....	Best yellow onions.....	2 00
Thos. Crofts, East Toledo, O.....	2d.....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display onions.....	5 00
Thos. Crofts, East Toledo, O.....	2d.....	2 00

FARM PRODUCTS—VEGETABLES.

Owner's name and post-office.	Name of article.	Premium.
Lewis Swickard, Westerville, O.....	Best red tomatoes.....	\$2 00
Asa McCreary, Cardington, O.....	2d ".....	1 00
Thos Crofts, East Toledo, O.....	Best purple tomatoes.....	2 00
Lewis Swickard, Westerville, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display tomatoes.....	3 00
Thos. Crofts, East Toledo, O.....	2d ".....	2 00
same	Best Drumhead cabbage.....	2 00
Lewis Swickard, Westerville, O.....	2d ".....	1 00
Whipps Bros., Marion, O.....	Best flat Dutch.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best red Dutch.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best Savoy.....	2 00
Asa McCreary, Cardington, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Best cauliflower.....	2 00
Thos. Crofts, East Toledo, O.....	2d ".....	1 00
same	Best display peppers.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best celery.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
Mrs. Ada Curran, Westerville, O.....	Best 3 marrow squashes.....	2 00
Thos. Crofts, East Toledo, O.....	2d ".....	1 00
same	Best 3 Hubbard squashes.....	2 00
Whipps Bros., Marion, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best winter crook-neck squash.....	2 00
J. L. Anderson, Westerville, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Best 3 Marblehead squashes.....	2 00
Thos. Crofts, East Toledo, O.....	2d ".....	1 00
same	Best 3 American turban squashes.....	2 00
Whipps Bros., Marion, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best French squash.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best summer squash.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
same	Best display squashes.....	5 00
Thos. Crofts, East Toledo, O.....	2d ".....	2 00
E. S. Tussing, Canal Winchester, O.....	Best display pumpkins.....	5 00
Thos. Crofts, East Toledo, O.....	2d ".....	2 00
Lewis Swickard, Westerville, O.....	Best 12 early sweet corn.....	2 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
same	Best late sweet corn.....	2 00
Lewis Swickard, Westerville, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display sweet corn.....	3 00
Lewis Swickard, Westerville, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best display watermelons.....	5 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	2 00
same	Best display nutmeg and muskmelons.....	5 00
Thos. Crofts, East Toledo, O.....	2d ".....	2 00
J. L. Anderson, Westerville, O.....	Best display garden bears in pod.....	5 00
G. N. Toops, Chillicothe, O.....	2d ".....	2 00
Thos. Crofts, East Toledo, O.....	Best display garden peas in pod.....	2 00
David Heckman, Weston, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Best display cucumbers.....	3 00
E. S. Tussing, Canal Winchester, O.....	2d ".....	1 00
David Heckman, Weston, O.....	Best purple egg plant.....	2 00
Thos. Crofts, East Toledo, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Largest pumpkin.....	3 00
Thos. Crofts, East Toledo, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Largest squash.....	3 00
Asa McCreary, Cardington, O.....	2d ".....	1 00
Thos. Crofts, East Toledo, O.....	Largest cabbage.....	2 00
Asa McCreary, Cardington, O.....	2d ".....	1 00
E. S. Tussing, Canal Winchester, O.....	Best display vegetables.....	10 00
Thos. Crofts, East Toledo, O.....	2d ".....	5 00

FARM PRODUCTS—COUNTY EXHIBITS OF FARM PRODUCTS.

Owner's name and post-office.	Name of article.	Premium.
Albert Neifer, Weston, O., Wood Co	Best representative co. ex. farm prod'ts	\$100 00
Whipps Bros., Marion, O., Marion Co.	2d " " "	75 00
L. M. Gregg, Springboro, O., Warren Co	3d " " "	50 00
J. L. Keckley, Marysville, O., Union Co.....	4th " " "	25 00

BEES, HONEY AND APIARIAN SUPPLIES.

Owner's name and post-office.	Name of article.	Premium.
A. S. Goodrich, Worthington, O	Best crate comb honey	\$8 00
B. E. Morris, Bloomington, O	2d " " "	3 00
A. S. Goodrich, Worthington, O	Best display comb honey	12 00
H. Besse, Delaware, O	2d " " "	6 00
A. S. Goodrich, Worthington, O	Best 12 filled one pound sections	4 00
H. Besse, Delaware, O	2d " " "	2 00
A. S. Goodrich, Worthington, O	Best display extracted honey	5 00
H. Besse, Delaware, O	2d " " "	3 00
A. S. Goodrich, Worthington, O	Best general display	10 00
H. Besse, Delaware, O	2d " " "	5 00
B. E. Morris, Bloomington, O	Best nucleus Italian bees	5 00
M. M. Barger, Mt. Gilcard, O	2d " " "	3 00
Mrs. E. Besse, Delaware, O	Best display queen bees	3 00
A. S. Goodrich, Worthington, O	Best sample beeswax	2 00

APIARIAN SUPPLIES.

Owner's name and post-office.	Name of article.	Premium.
H. Besse, Delaware, O	Best samp. comb found'n for brood chamb's	\$2 00
S. A. Morris, Bloomington, O	Best sample comb for surplus honey	2 00
H. Besse, Delaware, O	Best comb foundation mill	3 00
same	Best beeswax extractor	2 00
same	Best bees smoker	2 00
same	Best uncapping knife	1 00
same	Best bee veil	1 00
same	Best bee feeder	2 00
S. E. Morris, Bloomington, O	2d " " "	1 00
H. Besse, Delaware, O	Best honey extractor	2 00
same	Best shipping case	2 00
S. E. Morris, Bloomington, O	2d " " "	1 00
same	Best arrangement for absorbing moisture and retaining heat at top of hive in winter	1 00

FARM PRODUCTS—SUMMER AND FALL APPLES.

Owner's name and post-office.	Name of article.	Premium.
W. H. West, Chillicothe, O.....	Best 6 varieties for summer.....	\$5
D. F. Corwin, Springboro, O.....	2d	5 00
W. H. West, Chillicothe, O.....	Best 8 varieties, summer	2 00
D. F. Corwin, Springboro, O.....	2d	2 00
H. Bookwalter, Hallsville, O.....	Best new variety.....	2 00
W. B. Cherry, New Plymouth, O.....	2d	1 00
A. H. Creamer, Parrott, O.....	Best 8 varieties, large.....	2 00
W. H. West, Chillicothe, O.....	2d	2 00
Daniel Duer, Millersburg, O.....	Best 8 varieties for market.....	2 00
D. F. Corwin, Springboro, O.....	2d	2 00
W. W. Farnsworth, Waterville, O.....	Best variety summer dessert	2 00
Daniel Duer, Millersburg, O.....	2d	1 00
Hurst & Hurst, Chillicothe, O.....	Best variety fall dessert	2 00
D. F. Corwin, Springboro, O.....	2d	1 00
W. H. West, Chillicothe, O.....	Best arranged basket	5 00
Hurst & Hurst, Chillicothe, O.....	2d	5 00
Daniel Duer, Millersburg, O.....	Best display 15 varieties.....	10 00
W. H. West, Chillicothe, O.....	2d	5 00

WINTER APPLES.

Owner's name and post-office.	Name of article.	Premium.
Grant Dresbach, Hallsville, O.....	Best 12 varieties for family use.....	\$10 00
W. H. Hurst, Chillicothe, O.....	2d	5 00
Simon Leist, Amanda, O.....	Best 6 varieties for family use.....	5 00
Grant Dresbach, Hallsville, O.....	2d	3 00
W. D. Buyer, Mason, O.....	Best 6 plates, large.....	5 00
Simon Leist, Amanda, O.....	2d	3 00
Grant Dresbach, Hallsville, O.....	Best variety dessert.....	2 00
Hurst & Hurst, Chillicothe, O.....	2d	1 00
David Strouse, Adelphi, O.....	Best new variety	3 00
A. H. Creamer, Parrott, O.....	2d	1 00
Grant Dresbach, Hallsville, O.....	Best 6 varieties for market	5 00
Daniel Duer, Millersburg, O.....	2d	3 00
Grant Dresbach, Hallsville, O.....	Best display 30 varieties.....	15 00
Daniel Duer, Millersburg, O.....	2d	8 00

PLATE APPLES—WINTER.

Owner's name and post-office.	Name of article.	Premium.
J. G. Bilderback, Millersburg, O.....	Best Baldwin	\$1 25
W. W. Farnsworth, Waterville, O.....	2d	75
W. H. West, Chillicothe, O.....	Best Bailey's Sweet.....	1 25
Martin Baker, Clarksburg, O.....	2d	75
F. Bookwalter, Hallsville, O.....	Best yellow Bellflower.....	1 25
Grant Dresbach, Hallsville, O.....	2d	75
Daniel Duer, Millersburg, O.....	Best Belmont.....	1 25
J. G. Bilderback, Millersburg, O.....	2d	75
Nelson Cox, Ensee, O.....	Best Ben Davis.....	1 25
W. H. West, Chillicothe, O.....	2d	75
J. G. Bilderback, Millersburg, O.....	Best Black Gilliflower.....	1 25
J. B. Stewart, Jacksonstown, O.....	2d	75
A. J. Trumbo, Hanging Rock, O.....	Best Blue Pearmain	1 25
A. H. Creamer, Parrott, O.....	Best Fallawater.....	1 25
David Strouse, Adelphi, O.....	2d	75

FARM PRODUCTS—PLATE APPLES—WINTER—Concluded.

Owner's name and post-office.	Name of article.	Premium.
Hurst & Hurst, Chillicothe, O.....	Best American Golden Russett.....	\$1 25
W. H. West, ".....	2d ".....	75
W. W. Farnsworth, Waterville, O.....	Best Grimes' Golden.....	1 25
Grant Dresbach, Hallsville, O.....	2d ".....	75
Daniel Duer, Millersburg, O.....	Best Hubbardson Nonesuch.....	1 25
J. G. Bilderback, ".....	2d ".....	75
same ".....	Best Holland Pippin.....	1 25
David Strouse, Adelphi, ".....	" Jonathan ".....	1 25
Simon Leist, Amanda, ".....	2d ".....	75
Grant Dresbach, Hallsville, O.....	Best Kaighn's Spitzenberg.....	1 25
Levi Buckwalter, ".....	2d ".....	75
David Strouse, Adelphi, O.....	Best King of Tomkins County.....	1 25
W. H. West, Chillicothe, O.....	2d ".....	75
Hurst & Hurst, ".....	Best Limber Twig.....	1 25
W. D. Boyer, Mason, O.....	2d ".....	75
Simon Leist, Amanda, O.....	Best Newtown Pippin.....	1 25
Grant Dresbach, Hallsville, O.....	2d ".....	75
W. H. West, Chillicothe, O.....	Best Newtown Spitzenberg.....	1 25
Hurst & Hurst, ".....	2d ".....	75
A. H. Creamer, Parrott, O.....	Best Northern Spy.....	1 25
A. Halman, Hallsville, O.....	2d ".....	75
H. Bookwalter, ".....	Best Ortley.....	1 25
F. Bookwalter, ".....	2d ".....	75
W. H. West, Chillicothe, O.....	Best Paradise Winter Sweet.....	1 25
A. H. Creamer, Parrott, O.....	2d ".....	75
W. H. West, Chillicothe, O.....	Best Rambo.....	1 25
W. H. Ortman, Hallsville, O.....	2d ".....	75
Simon Leist, Amanda, O.....	Best Rawle's Janet.....	1 25
Nelson Cox, Ensee, O.....	2d ".....	75
Simon Leist, Amanda, O.....	Best Red Canada.....	1 25
L. Buckwalter, Hallsville, O.....	2d ".....	75
W. W. Farnsworth, Waterville, O.....	Best Rhode Island Greening.....	1 25
Grant Dresbach, Hallsville, O.....	2d ".....	75
Nelson Cox, Ensee, O.....	Best Rome Beauty.....	1 25
U. T. Cox, ".....	2d ".....	75
Simon Leist, Amanda, O.....	Best Roman Stem.....	1 25
D. F. Corwin, Springboro, O.....	2d ".....	75
J. G. Bilderback, Millersburg, O.....	Best Roxbury Russett.....	1 25
Simon Leist, Amanda, O.....	2d ".....	75
C. V. Jones, Chillicothe, O.....	Best Seek-no-further.....	1 25
Nelson Cox, Ensee, O.....	2d ".....	75
C. V. Jones, Chillicothe, O.....	Best Smith's Cider.....	1 25
David Strouse, Adelphi, O.....	2d ".....	75
J. G. Bilderback, Millersburg, O.....	Best Smoke House.....	1 25
Hurst & Hurst, Chillicothe, O.....	2d ".....	75
Isaac Freeman, Rex, O.....	Best Stark.....	1 25
Simon Leist, Amanda, O.....	2d ".....	75
Daniel Duer, Millersburg, O.....	Best St. Lawrence.....	1 25
W. H. West, Chillicothe, O.....	2d ".....	75
J. G. Bilderback, Millersburg, O.....	Best Summer Queen.....	1 25
Daniel Duer, ".....	2d ".....	75
Hurst & Hurst, Chillicothe, O.....	Best Sweet Swar.....	1 25
W. H. West, ".....	Best Tallman Sweet.....	1 25
Hurst & Hurst, ".....	2d ".....	75
D. F. Corwin, Springboro, O.....	Best Wagener.....	1 25
Mrs. Jenn. Chillicothe, O.....	2d ".....	75
J. G. Bilderback, Millersburg, O.....	Best Wealthy.....	1 25
Daniel Duer, Millersburg, O.....	2d ".....	75
Hurst & Hurst, Chillicothe, O.....	Best White Pippin.....	1 25
Grant Dresbach, Hallsville, O.....	2d ".....	75
Hurst & Hurst, Chillicothe, O.....	Best Wine Sap.....	1 25
H. Bookwalter, Hallsville, O.....	2d ".....	75
Grant Dresbach, ".....	Best Willow Twig.....	1 25
W. H. Ortman, ".....	" York Imperial.....	1 25
W. D. Boyer, Mason, O.....	2d ".....	75

FARM PRODUCTS—APPLES—SUMMER AND FALL.

Owner's name and post-office.	Name of article.	Premium.
E. H. Cushman, Euclid, O	Best Alexander	\$1 25
W. V. Bay, Stanton, O	2d "	75
W. W. Farnsworth, Waterville, O	Best American Summer Pearmain	1 25
Hurst & Hurst, Chillicothe, O	2d "	75
L. M. Ayres, Urbana, O	Best Autumn Sweet Bough	1 25
W. H. West, Chillicothe, O	Best Benoni	1 25
Hurst & Hurst, Chillicothe, O	2d "	75
F. Bookwalter, Hallsville, O	Best Chenango Strawberry	1 25
H. Bookwalter, Hallsville, O	2d "	75
W. W. Farnsworth, Waterville, O	Best Duchess of Oldenburg	1 25
W. H. West, Chillicothe, O	Best Fall Pippin	1 25
W. D. Boyer, Mason, O	2d "	75
C. R. Elms, Lithopolis, O	Best Fall Wine	1 25
W. H. West, Chillicothe, O	2d "	75
A. Halman, Hallsville, O	Best Fall Rambo	1 25
Hurst & Hurst, Chillicothe, O	2d "	75
Simon Leist, Amanda, O	Best Golden Pippin	1 25
G. N. Toops, Chillicothe, O	2d "	75
A. D. Boyer, Mason, O	Best Gravenstein	1 25
W. H. West, Chillicothe, O	2d "	75
Hurst & Hurst, Chillicothe, O	Best Juneating	1 25
W. W. Farnsworth, Waterville, O	Best Lowell	1 25
Daniel Duer, Millersburg, O	2d "	75
W. D. Boyer, Mason, O	Best Malden's Blush	1 25
Daniel Duer, Millersburg, O	2d "	75
W. H. West, Chillicothe, O	Best Ohio Nonpareil	1 25
J. R. Abuatha, Chillicothe, O	2d "	75
W. W. Farnsworth, Waterville, O	Best Porter	1 25
J. G. Bloderback, Millersburg, O	2d "	75
W. W. Farnsworth, Waterville, O	Best Summer Strawberry	1 25
L. M. Ayres, Urbana, O	Best Sweet Bough	1 25
W. H. Ortman, Hallsville, O	Best Twenty Ounce	1 25
W. H. West, Chillicothe, O	2d "	75
W. H. Ortman, Hallsville, O	Best Western Beauty	1 25
H. Bookwalter, Hallsville, O	2d "	75

CRAB APPLES.

Owner's name and post-office.	Name of article.	Premium.
Joshua Seeney, Chillicothe, O	Best Hugh's Virginia	\$1 25
Joseph McCoy, Clarksburg, O	2d "	75
Simon Leist, Amanda, O	Best Red Siberian	1 25
G. N. Toops, Chillicothe, O	2d "	75
Simon Leist, Amanda, O	Best Transcendent	1 25
W. W. Farnsworth, Waterville, O	2d "	75
D. F. Corwin, Springboro, O	Best Yellow Siberian	1 25

PEACHES.

Owner's name and post-office.	Name of article.	Premium.
C. W. Counter, Toledo, O	Best 6 varieties	\$5 00
W. W. Farnsworth, Waterville, O	2d "	3 00
C. D. Tryon, Willoughby, O	Best 3 varieties	3 00
C. W. Counter, Toledo, O	2d "	1 00
C. D. Tryon, Willoughby, O	Best plate one variety	2 00

FARM PRODUCTS—PEACHES—Concluded.

Owner's name and post-office.	Name of article	Premium.
W. H. West, Chillicothe, O.....	2d best plate, one variety.....	\$1 00
James Chew, Andersonville, O.....	Best new seedling.....	2 00
Daniel Miller, Saitillo, O.....	2d ".....	1 00
C. D. Tryon, Willoughby, O.....	Best display.....	1 00
C. W. Counter, Toledo, O.....	2d ".....	5 00
C. D. Tryon, Willoughby, O.....	Best Barnard's Yellow Rare Ripe.....	1 25
C. E. Elsea, Lithopolis, O.....	" Chinese Cling.....	1 25
W. W. Farnsworth, Waterville, O.....	Best Crawford Early.....	1 25
C. W. Counter, Toledo, O.....	2d ".....	1 75
Geo. Wate, Willoughby, O.....	Best Crawford Late.....	1 25
C. D. Tryon, Willoughby, O.....	2d ".....	1 75
C. W. Counter, Toledo, O.....	Best Early Rivers.....	1 25
W. W. Farnsworth, Waterville, O.....	2d ".....	1 75
same.....	Best Hill's Chill.....	1 25
P. P. Stroevey, Chillicothe, O.....	Best La Grange.....	1 25
L. Jonston, Musselman Station, O.....	2d ".....	1 75
W. H. West, Chillicothe, O.....	Best Lemon Cling.....	1 25
Carpenter & Guinnel, Republic, O.....	2d ".....	1 75
W. H. West, Chillicothe, O.....	Best Old Mixon Cling.....	1 25
C. W. Counter, Toledo, O.....	2d ".....	1 75
same.....	Best Old Mixon Free.....	1 25
C. E. Elsea, Lithopolis, O.....	2d ".....	1 75
C. House, Willoughby, O.....	Best President.....	1 25
Carpenter & Guinnel, Republic, O.....	2d ".....	1 75
C. W. Counter, Toledo, O.....	Best Foster.....	1 25
C. D. Tryon, Willoughby, O.....	2d ".....	1 75
W. H. West, Chillicothe, O.....	Best Health Cling.....	1 25
Hurst & Hurst, Chillicothe, O.....	2d ".....	1 75
W. W. Farnsworth, Waterville, O.....	Best Salway.....	1 25
C. W. Counter, Toledo, O.....	2d ".....	1 75
C. D. Tryon, Willoughby, O.....	Best Serrate Early York.....	1 25
H. Bookwalter, Hallsville, O.....	Best Smock Late Free.....	1 25
W. H. West, Chillicothe, O.....	2d ".....	1 75
L. Jonston, Musselman Station, O.....	Best Steadley.....	1 25
W. H. West, Chillicothe, O.....	2d ".....	1 75
Carpenter & Guinnel, Republic, O.....	Best Stump the World.....	1 25
Hurst & Hurst, Chillicothe, O.....	2d ".....	1 75
Carpenter & Guinnel, Republic.....	Best Ward's Late.....	1 25
W. H. West, Chillicothe, O.....	2d ".....	1 75

QUINCES.

Owner's name and post-office.	Name of article.	Premium.
Henry Lowry, Shepherd, O.....	Best Champion.....	\$1 25
D. F. Corwin, Springboro, O.....	2d ".....	1 75
W. H. Ortman, Hallsville, O.....	Best Ray's Mammoth.....	1 25
D. F. Corwin, Springboro, O.....	2d ".....	1 75
L. Bookwalter, Hallsville, O.....	Best Orange.....	1 25
C. E. Elsea, Lithopolis, O.....	2d ".....	1 75
Adam Gartner, Chillicothe, O.....	Best Pear.....	1 25
H. Bookwalter, Hallsville, O.....	2d ".....	1 75
same.....	Best peck of quinces.....	3 00
F. Bookwalter, Hallsville, O.....	2d ".....	2 00

FARM PRODUCTS—PLUMS.

Owner's name and post-office	Name of article.	Premium.
T. S. Johnson, Gypsum, O.....	Best Coe's Golden Drop.....	\$1 25
W. W. Farnsworth, Waterville, O.....	2d ".....	1 25
same.....	Best Duane's Purple.....	1 25
same.....	Best Lombard.....	1 25
T. S. Johnson, Gypsum, O.....	2d ".....	1 25
W. H. West, Chillicothe, O.....	Best Shropshire.....	1 25
W. W. Farnsworth, Waterville, O.....	2d ".....	1 25
F. G. Witholt, Dayton, O.....	Best other variety.....	1 25
L. Jonston, Musselman Station, O.....	2d ".....	1 25
T. S. Johnson, Gypsum, O.....	Best display ten varieties.....	5 00
W. W. Farnsworth, Waterville, O.....	2d ".....	3 00
T. S. Johnson, Gypsum, O.....	Best display five varieties.....	3 00
W. W. Farnsworth, Waterville, O.....	2d ".....	2 00
T. S. Johnson, Gypsum, O.....	Best display three varieties.....	2 00
L. Jonston, Musselman Station.....	2d ".....	1 00

PEARS.

Owner's name and post-office.	Name of article.	Premium.
W. W. Farnsworth, Waterville, O.....	Best 6 varieties, summer and fall.....	\$3 00
C. W. Counter, Toledo, O.....	2d ".....	5 00
same.....	Best 12 varieties.....	10 00
W. W. Farnsworth, Waterville, O.....	2d ".....	5 00
same.....	Best 3 plates large.....	3 00
C. W. Counter, Toledo, O.....	2d ".....	2 00
E. H. Cushman, Euclid, O.....	Best new variety.....	3 00
Grant Dresbach, Hallsville, O.....	Best variety dessert.....	1 00
W. W. Farnsworth, Waterville, O.....	Best display 20 varieties.....	15 00
C. W. Counter, Toledo, O.....	2d ".....	8 00
Grant Dresbach, Hallsville, O.....	Best half peck Seckel.....	3 00
Jas. Dunipace, Perrysburg, O.....	2d ".....	2 00
same.....	Best half peck Bartlett.....	3 00
L. M. Ayres, Urbana, O.....	2d ".....	2 00
E. M. Woodard, Kirtland, O.....	Best Bartlett.....	1 25
W. H. Ortman, Hallsville, O.....	2d ".....	1 25
W. W. Farnsworth, Waterville, O.....	Best Belle Lucrative.....	1 25
C. W. Counter, Toledo, O.....	2d ".....	1 25
Carpenter & Guinnel, Republic, O.....	Best Buffum.....	1 25
Jas. Dunipace, Perrysburg, O.....	2d ".....	1 25
C. W. Counter, Toledo, O.....	Best Beurre d'Anjou.....	1 25
Isaac Freeman, Rex, O.....	2d ".....	1 25
W. W. Farnsworth, Waterville, O.....	Best Beurre Bosc.....	1 25
D. F. Corwin, Springboro, O.....	2d ".....	1 25
W. W. Farnsworth, Waterville, O.....	Best Beurre Clairgeau.....	1 25
Nelson Cox, Ensee, O.....	2d ".....	1 25
Jas. Dunipace, Perrysburg, O.....	Best Beurre Diel.....	1 25
Leo Weitz's Sons, Wilmington, O.....	2d ".....	1 25
W. W. Farnsworth, Waterville, O.....	Best Clapp's Favorite.....	1 25
Isaac Freeman, Rex, O.....	Best Columbia.....	1 25
Jas. Dunipace, Perrysburg, O.....	2d ".....	1 25
W. W. Farnsworth, Waterville, O.....	Best Doyenne Boussock.....	1 25
L. M. Ayres, Urbana, O.....	2d ".....	1 25
C. W. Counter, Toledo, O.....	Best Duchesse.....	1 25
W. W. Farnsworth, Waterville, O.....	2d ".....	1 25
same.....	Best Flemish Beauty.....	1 25
C. W. Counter, Toledo, O.....	2d ".....	1 25
same.....	Best Glout Morceau.....	1 25
W. W. Farnsworth, Waterville, O.....	2d ".....	1 25

FARM PRODUCTS—PEARS—Concluded.

Owner's name and post-office.	Name of article.	Premium.
C. W. Counter, Toledo, O.....	Best Howell.....	\$1 25
W. W. Farnsworth, Waterville, O.....	2d	75
C. E. Elsea, Lithopolis, O.....	Best Keiffer.....	1 25
Jas. Dunpace, Perrysburg, O.....	2d	75
W. W. Farnsworth, Waterville, O.....	Best Lawrence.....	1 25
W. D. Boyer, Mason, O.....	2d	75
Leo Weltz's Sons, Wilmington, O.....	Best Le Comte.....	1 25
C. E. Elsea, Lithopolis, O.....	2d	75
W. W. Farnsworth, Waterville, O.....	Best Louise Bonne.....	1 25
C. E. Elsea, Lithopolis, O.....	2d	75
Jas. Dunpace, Perrysburg, O.....	Best Onondaga.....	1 25
Edward Frye, Dayton, O.....	2d	75
Leo Weltz's Sons, Wilmington, O.....	Best President.....	1 25
W. W. Farnsworth, Waterville, O.....	Best Beckel.....	1 25
Grant Dresbach, Hallsville, O.....	2d	75
C. W. Counter, Toledo, O.....	Best Sheldon.....	1 25
W. W. Farnsworth, Waterville, O.....	2d	75
same.....	Best Vicar.....	1 25
Jas. Dunpace, Perrysburg, O.....	2d	75
same.....	Best Winter Nella.....	1 25
J. H. Britton, Painesville, O.....	2d	75

GRAPES.

Owner's name and post-office.	Name of article.	Premium.
E. H. Cushman, Euclid, O.....	Best 24 varieties.....	\$15 00
same.....	Best 12 varieties.....	10 00
E. M. Woodard, Kirtland, O.....	2d	5 00
same.....	Best 6 varieties.....	6 00
E. H. Cushman, Euclid, O.....	2d	8 00
same.....	Best 3 varieties.....	3 00
E. M. Woodard, Kirtland, O.....	2d	2 00
E. H. Cushman, Euclid, O.....	Best 3 plates early table.....	8 00
E. M. Woodard, Kirtland, O.....	2d	2 00
Jas. Dunpace, Perrysburg, O.....	Best 3 plates late.....	8 00
W. H. West, Chillicothe, O.....	Best 3 plates for red wine.....	8 00
E. H. Cushman, Euclid, O.....	Best Agawam.....	1 25
W. H. West, Chillicothe, O.....	Best Brighton.....	1 25
E. H. Cushman, Euclid, O.....	2d	75
W. H. West, Chillicothe, O.....	Best Catawba.....	1 25
E. H. Cushman, Euclid, O.....	2d	75
E. H. Cushman, Euclid, O.....	Best Downing.....	1 25
D. F. Corwin, Springboro, O.....	Best Clinton.....	1 25
T. S. Johnson, Gypsum, O.....	2d	75
Warren House, Willoughby, O.....	Best Concord.....	1 25
E. H. Cushman, Euclid, O.....	2d	75
T. S. Johnson, Gypsum, O.....	Best Delaware.....	1 25
J. H. Tryon, Willoughby, O.....	2d	75
E. H. Cushman, Euclid, O.....	Best Diana.....	1 25
L. M. Ayres, Urbana, O.....	2d	75
T. S. Johnson, Gypsum, O.....	Best Duchesne.....	1 25
E. H. Cushman, Euclid, O.....	2d	75
same.....	Best Early Victor.....	1 25
John S. Snider, Lancaster, O.....	Best Elvira.....	1 25
E. M. Woodard, Kirtland, O.....	2d	75
T. S. Johnson, Gypsum, O.....	Best Empire State.....	1 25
E. H. Cushman, Euclid, O.....	2d	75
E. M. Woodard, Kirtland, O.....	Best Ives.....	1 25
John S. Snyder, Lancaster, O.....	2d	75
D. F. Corwin, Springboro, O.....	Best Isabella.....	1 25
E. H. Cushman, Euclid, O.....	Best Jefferson.....	1 25
same.....	Best Jewel.....	1 25
E. M. Woodard, Kirtland, O.....	Best Lady.....	1 25
W. H. West, Chillicothe, O.....	Best Lady Washington.....	1 25
T. S. Johnson, Gypsum, O.....	2d	75
E. M. Woodard, Kirtland, O.....	Best Lindley.....	1 25
T. S. Johnson, Gypsum, O.....	2d	75

FARM PRODUCTS—GRAPES—Concluded.

Owner's name and post-office.	Name of article.	Premium.
L. M. Ayres Urbana, O.....	Best Martha.....	\$1 25
T. S. Johnson, Gypsum, O.....	2d ".....	75
same	Best Missouri Riesling.....	1 25
Jno. S. Snider, Lancaster, O.....	2d ".....	75
T. S. Johnson, Gypsum, O.....	Best Moore's Diamond.....	1 25
E. H. Cushman, Euclid, O.....	" Moyer.....	1 25
same	" Nectar.....	1 25
W. H. West, Chillicothe, O.....	Best Norton's Virginia.....	1 25
E. H. Cushman, Euclid, O.....	2d ".....	75
D. F. Corwin, Springboro, O.....	Best Niagara.....	1 25
Elmer Manchester, Perry, O.....	Best Pocklington.....	1 25
D. F. Corwin, Springboro, O.....	2d ".....	75
E. H. Cushman, Euclid, O.....	Best Salem.....	1 25
T. S. Johnson, Gypsum, O.....	2d ".....	75
E. H. Cushman, Euclid, O.....	Best Vergennes.....	1 25
L. Jonston, Musselman Station, O.....	" Walter.....	1 25
W. H. West, Chillicothe, O.....	Best Wilder.....	1 25
E. H. Cushman, Euclid, O.....	2d ".....	75
same	Best Woodruff's Red.....	1 25
D. F. Corwin, Springboro, O.....	2d ".....	75
Elmer Manchester, Perry, O.....	Best Worden.....	1 25
E. H. Cushman, Euclid, O.....	2d ".....	75

COUNTY FRUITS.

Owner's name and post-office.	Name of article.	Premium.
W. W. Farnsworth, Waterville, Lucas Co., O.....	Best county exhibit 100 plates.....	\$100 00
D. F. Corwin, Springboro, Warren Co., O.....	2d ".....	75 00
T. S. Johnson, Gypsum, Ottawa Co., O.....	3d ".....	50 00
E. M. Woodard, Kirtland, Lake Co., O.....	4th ".....	25 00

FLOWERS AND PLANTS.

PROFESSIONAL LIST.

Owner's name and post-office.	Name of article.	Premium.
Underwood Bros., Columbus, O.....	Best collection of plants.....	\$20 00
Mrs. E. L. Charles, ".....	2d ".....	10 00
same.....	Best single specimen.....	5 00
Underwood Bros., ".....	Best collection palms.....	10 00
Mrs. E. L. Charles, ".....	2d ".....	5 00
Underwood Bros., ".....	Best single palm.....	5 00
Mrs. E. L. Charles, ".....	Best collection ferns.....	10 00
Underwood Bros., ".....	2d ".....	5 00
Mrs. E. L. Charles, ".....	Best specimen fern.....	5 00
Geo. F. Brehmer, Chillicothe, O.....	Best collection variegated plants.....	10 00
Underwood Bros., Columbus, O.....	2d ".....	5 00
Geo. F. Brehmer, Chillicothe, O.....	Best single specimen.....	5 00
Mrs. E. L. Charles, Columbus, O.....	Best collection begonias.....	5 00
Underwood Bros., ".....	2d ".....	4 00
Mrs. E. L. Charles, ".....	Best specimen begonia.....	2 00
T. C. Breese, West Berlin, O.....	Best collection cannas.....	5 00
Mrs. E. L. Charles, Columbus, O.....	2d ".....	3 00
Underwood Bros., ".....	Best collection ornamental grasses.....	5 00
Geo. F. Brehmer, Chillicothe, O.....	2d ".....	3 00
Underwood Bros., Columbus, O.....	Best specimen plant.....	2 00
same.....	Best collection evergreen plants.....	10 00
same.....	Best specimen plant.....	3 00
Geo. F. Brehmer, Chillicothe, O.....	Best collection plants on trellis work.....	5 00
Mrs. E. L. Charles, Columbus, O.....	2d ".....	2 00
same.....	Best specimen plant.....	2 00
Jno. J. Brehmer, Circleville, O.....	Best collection aloes.....	3 00
Underwood Bros., Columbus, O.....	2d ".....	1 00
Jno. J. Brehmer, Circleville, O.....	Best specimen.....	1 00
Geo. F. Brehmer, Chillicothe, O.....	Best collection fancy caladiums.....	5 00
Mrs. E. L. Charles, Columbus, O.....	2d ".....	3 00
same.....	Best specimen plant.....	2 00
Geo. F. Brehmer, Chillicothe, O.....	Best collection petunias.....	3 00
same.....	Best collection new plant.....	10 00
Underwood Bros., Columbus, O.....	2d ".....	5 00
Geo. F. Brehmer, Chillicothe, O.....	Best collection cacti.....	5 00
Mrs. E. L. Charles, Columbus, O.....	2d ".....	2 00
same.....	Best specimen.....	3 00
T. C. Breese, West Berlin, O.....	Best collection geraniums.....	5 00
Geo. F. Brehmer, Chillicothe, O.....	2d ".....	2 00
T. C. Breese, West Berlin, O.....	Best specimen.....	2 00
Mrs. E. L. Charles, Columbus, O.....	Best collection roses.....	10 00
Underwood Bros., ".....	2d ".....	5 00
same.....	Best collection verbenas.....	5 00
Mrs. E. L. Charles, ".....	2d ".....	2 00
Underwood Bros., ".....	Best collection pansies.....	3 00
Geo. F. Brehmer, Chillicothe, O.....	2d ".....	1 00
Underwood Bros., Columbus, O.....	Best collection asters.....	3 00
same.....	Best arch living plants.....	5 00
T. C. Breese, West Berlin, O.....	Best ribbon-bed living plants.....	5 00
Underwood Bros., Columbus, O.....	2d ".....	3 00
Mrs. E. L. Charles, ".....	Best pair vases living plants.....	5 00
Underwood Bros., ".....	" 6 hanging baskets.....	5 00
Mrs. E. L. Charles, ".....	2d ".....	2 00
same.....	Best single basket.....	2 00
T. C. Breese, West Berlin, O.....	" rustic work.....	5 00
Underwood Bros., Columbus, O.....	2d ".....	2 00

FLOWERS AND PLANTS—CUT FLOWERS.

Owner's name and post-office.	Name of article.	Premium.
Underwood Bros., Columbus, O.....	Best pair hand bouquets.....	\$3 00
Mrs. E. L. Charles, ".....	2d ".....	3 00
Underwood Bros., ".....	Best pair parlor bouquets.....	5 00
Mrs. E. L. Charles, ".....	2d ".....	3 00
Underwood Bros., ".....	Best display floral designs.....	20 00
Mrs. E. L. Charles, ".....	2d ".....	10 00
Underwood Bros., ".....	Best display cut roses.....	5 00
Mrs. E. L. Charles, ".....	2d ".....	2 00
Geo. F. Brehmer, Chillicothe, O.....	Best display cut dahlias.....	5 00
Underwood Bros., Columbus, O.....	2d ".....	2 00
same.....	Best cut gladiolus.....	5 00
Geo. F. Brehmer, Chillicothe, O.....	2d ".....	2 00
Underwood Bros., Columbus, O.....	Best cut verbenas.....	5 00
Geo. F. Brehmer, Chillicothe, O.....	2d ".....	2 00
Underwood Bros., Columbus, O.....	Best cut phloxes.....	5 00
Underwood Bros., Columbus, O.....	2d ".....	2 00
Geo. F. Brehmer, Chillicothe, O.....	Best and largest display cut flowers.....	15 00
Underwood Bros., Columbus, O.....	2d ".....	8 00

WOMAN'S WORK.

HOUSEHOLD FABRICS.

Owner's name and post-office.	Name of article.	Premium.
Mrs. Mary Stewart, Atherton, O.....	Best rag carpet.....	\$5 00
J. B. Stewart, Jacksontown, O.....	2d	3 00
Mrs. Mary Stewart, Atherton, O.....	Best rag hearth rug.....	8 00
Mrs. L. Trimble, Marion, O.....	2d	2 00
Thos. Martin, Columbus, O.....	Best yarn rug.....	8 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best domestic flannel	8 00
Abner Graham, Reynoldsburg, O.....	2d	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best domestic linen	8 00
E. Dennis, Pataskala, O.....	2d	2 00
Mrs. R. M. Johnson, Pataskala, O.....	Best tow cloth	8 00
E. Dennis, Pataskala, O.....	2d	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best woolen knit stockings	1 00
Mrs. H. Bieber, Delaware, O.....	" linen knit socks	1 00
Mrs. Kate Baldwin, Columbus, O.....	" cotton knit stockings.....	1 00
Mrs. W. J. Carty, Columbus, O.....	" silk knit socks	1 00
Mrs. Mary S. Maxwell, Reynoldsburg, O.....	" " wristlets	1 00
Mrs. Miller, Columbus, O.....	" " gloves	1 00
Emma Klyazinski, Columbus, O.....	" " mittens.....	1 00
Elva Turner, N. Fairfield, O.....	" specimen darning	1 00
Miss C. W. Manpin, Arbuckle, W. Va.....	" cotton knit tidy	1 00
Mrs. L. Trimble, Marion, O.....	" " lace	1 00
Mrs. Jane McMurphy, Newcomerstown, O.....	" woolen knit lace.....	1 00
Mrs. H. Bieber, Delaware, O.....	" cotton knit socks.....	1 00
Mrs. Mary S. Maxwell, Reynoldsburg, O.....	" woolen knit socks.....	1 00
Mrs. Jane McMurphy, Newcomerstown, O.....	" " gloves	1 00
Emma Klyazinski, Columbus, O.....	" " mittens.....	1 00
Mrs. W. F. Barr, Brice, O.....	" woolen shawl.....	2 00
Mrs. L. Trimble, Marion, O.....	" worsted knit stocking.....	1 00
Elizabeth Leigh, Groveport, O.....	" woolen knit shirt.....	1 00
Maggie Cunningham, Marion, O.....	" child's suit.....	8 00
Mrs. C. W. Maupin, Arbuckle, W. Va.....	" bed spread	8 00
Mrs. C. H. Morey, Marysville, O.....	2d	1 00
Maggie Cunningham, Marion, O.....	Best specimen tatting	1 00
Mrs. R. M. Johnson, Pataskala, O.....	Best linen sewing thread	2 00

NEEDLE WORK.

Owner's name and post-office.	Name of article.	Premium.
Mrs. Mary S. Maxwell, Reynoldsburg, O.....	Best gent's shirt.....	\$2 00
Mrs. W. R. Sprague, Brice, O.....	2d	1 00
Mrs. F. M. DeWeese, Chillicothe, O.....	Best chemise.....	2 00
Mrs. S. E. Tilton, N. Fairfield, O.....	2d	1 00
Mrs. A. H. Morey, Marysville, O.....	Best hem stitching	1 00
Minnie and Clara Bieber, Delaware, O.....	" pair pillow shams	2 00
Mrs. E. H. Talbut, Cincinnati, O.....	2d	1 00
Emma Klyazinski, Columbus, O.....	Best pair fancy sheets	2 00
Mrs. Miller, Columbus, O.....	" specimen darning	1 00
Mrs. Belle McIntyre, Columbus, O.....	2d	50
Mrs. Hattie Bolander, Marion, O.....	Best lady's robe.....	2 00
Mrs. R. M. Johnston, Pataskala, O.....	" lady's dress	8 00
Mrs. E. M. Miller, Greenville, O.....	" child's dress	2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d	1 00

WOMAN'S WORK—NEEDLE WORK—Concluded.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best suit lady's underwear.....	\$3 00
Mrs. C. J. McClure, Xenia, O.....	2d " ".....	2 00
Miss C. W. Maupin, Arbuckle, W. Va.....	Best lady's skirt.....	2 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	2d " ".....	1 00
Miss M. L. Harter, Lewis Center, O.....	Best lady's night dress.....	2 00
Mrs. E. M. Miller, Greenville, O.....	2d " ".....	1 00
Mrs. W. D. Boyer, Mason, O.....	Best silk quilt.....	3 00
Miss Ava Main, Delaware, O.....	Best velvet quilt.....	3 00
Mrs. F. M. DeWeese, Chillicothe, O.....	2d " ".....	2 00
Mrs. Jane McMurphy, Newcomerstown, O.....	Best white quilt.....	2 00
Mrs. F. M. DeWeese, Chillicothe, O.....	" patchwork.....	2 00
Mrs. E. Beerbower, Marion, O.....	" calico quilt.....	2 00
Mrs. Wm. Ewing, Columbus, O.....	" embroidered quilt.....	3 00
Elva Turner, North Fairfield, O.....	" cradle quilt.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best bedspread on tulle.....	3 00
Mrs. E. M. Miller, Greenville, O.....	2c " ".....	1 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best display machine work.....	3 00
Mrs. Jessie Hamilton, Columbus, O.....	2d " ".....	2 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best display hand needle work.....	3 00
Mrs. L. Trimble, Marion, O.....	2d " ".....	2 00

SILK AND SATIN STITCH EMBROIDERY.

Owner's name and post-office.	Name of article.	Premium.
Mrs. Sue Hills, Delaware, O.....	Best infant's cloak.....	\$2 00
Miss Lena Strothenk, Columbus, O.....	" " skirt.....	2 00
Mrs. W. R. Sprague, Brice, O.....	" " shawl.....	1 00
Grace Holberman, Marion, O.....	" " dress.....	2 00
Mrs. W. R. Sprague, Brice, O.....	Best lady's skirt.....	2 00
Mrs. E. M. Miller, Greenville, O.....	2d " ".....	1 00
Mrs. Sue Hills, Delaware, O.....	Best dressing sacque.....	2 00
Mrs. W. R. Sprague, Brice, O.....	" lady's dress.....	3 00
Mrs. J. W. Davy, Columbus, O.....	" tea gown.....	3 00
Mrs. Sue Hills, Delaware, O.....	" slippers.....	1 00
Mrs. A. H. Morey, Marysville, O.....	" Initial.....	1 00
Elizabeth Leigh, Groveport, O.....	Best single specimen embroidery.....	2 00
Lena Strothenk, Columbus, O.....	2d " ".....	1 00
Mrs. Sue Hills, Delaware, O.....	Best display silk embroidery.....	5 00

ART NEEDLE WORK—AMATEURS.

Owner's name and post-office.	Name of article.	Premium.
Mrs. A. Alblinger, Newport, Ark.....	Best one panel screen.....	\$3 00
Mrs. Chas. Higgins, Columbus, O.....	2d " ".....	1 00
Minnie A. Nichols, Columbus, O.....	Best piano cover.....	4 00
Mrs. W. R. Sprague, Brice, O.....	2d " ".....	1 00
Mrs. Chas. Higgins, Columbus, O.....	Best piano scarf.....	3 00
Mrs. M. J. Garbin, Fremont, O.....	2d " ".....	1 00
Mrs. Chas. Higgins, Columbus, O.....	Best pair portieres.....	7 00
Mrs. H. S. Tanner, Paris, Ill.....	2d " ".....	3 00
Mrs. Chas. Higgins, Columbus, O.....	Best table cover.....	4 00
Mrs. A. Alblinger, Newport, Ark.....	2d " ".....	1 00
Emma J. Williams, Cincinnati, O.....	Best table scarf.....	3 00

WOMAN'S WORK—ART NEEDLE WORK—AMATEURS—Concluded.

Owner's name and post-office.	Name of article.	Premium.
Mrs. A. Ablinger, Newport, Ark.....	Best ottoman or foot rest.....	\$2 00
Mrs. Chas. Higgins, Columbus, O.....	" pair floor pillows.....	2 00
Mrs. Sue Hills, Delaware, O.....	" door panel.....	2 00
Mrs. H. S. Tanner, Paris, Ill.....	" chair.....	1 00
Mrs. W. R. Sprague, Brice, O.....	" chair strip.....	2 00
Margaret Hills, Delaware, O.....	" child's dress.....	2 00
Mrs. W. R. Sprague, Brice, O.....	" lady's dress.....	2 00
Mrs. Sue Hills, Delaware, O.....	" easel scarf.....	2 00
Mrs. H. S. Tanner, Paris, Ill.....	" hand screen.....	2 00
M. & C. Bieber, Delaware, O.....	" shopping bag.....	1 00
Mary R. Moore, Columbus, O.....	" portfolio.....	1 00
Mrs. Jessie Hamilton, Columbus, O.....	" toilet set.....	2 00
Mrs. H. S. Tanner, Paris, Ill.....	" sideboard cover.....	2 00
same.....	" wall splasher.....	1 00
Miss M. A. Nichols, Columbus, O.....	" towel.....	1 00
M. & C. Bieber, Delaware, O.....	" head rest.....	2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d ".....	1 00
Mrs. H. S. Tanner, Paris, Ill.....	Best fancy pin cushion.....	2 00
Miss M. A. Nichols, Columbus, O.....	2d ".....	1 00
Emma J. Williams, Cincinnati, O.....	Best mantel lambrequin.....	3 00
Mrs. A. Ablinger, Newport, Ark.....	2d ".....	1 00
Mrs. Chas. Higgins, Columbus, O.....	Best sofa cushion.....	2 00
M. & C. Bieber, Delaware, O.....	2d ".....	1 00
Miss Alice Ewing, Columbus, O.....	Best bed spread.....	4 00
Mrs. Chas. Higgins.....	2d ".....	1 00
Mrs. H. S. Tanner, Paris, Ill.....	Best book cover.....	1 00
Miss Emma Miller, Xenia, O.....	" apron.....	1 00
same.....	" slippers.....	1 00
same.....	" parasol.....	2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d ".....	1 00
same.....	Best lamp screen.....	2 00
Mrs. Wm. Ewing, ".....	" finger bowl doylies.....	2 00
Mrs. E. M. Miller, Greenville, O.....	" damask table cloth.....	2 00
Mrs. Miller, Columbus, O.....	" napkins.....	2 00
Miss M. A. Nichols, Columbus, O.....	" table center.....	3 00
Emma J. Williams, Cincinnati, O.....	2d ".....	1 00
Mrs. R. H. Talbut, ".....	Best slumber robe.....	3 00
Mrs. Chas. Higgins, Columbus, O.....	2d ".....	1 00
Mrs. Jessie Hamilton, ".....	Best carriage robe.....	2 00
Mrs. B. R. Howser, Marion, O.....	2d ".....	1 00
Mrs. W. R. Sprague, Brice, O.....	Best specimen art needle work.....	3 00
Emma J. Williams, Cincinnati, O.....	2d ".....	2 00
Mrs. Chas. Higgins, Columbus, O.....	Best display art needle work.....	10 00
Mrs. L. Trimble, Marion, O.....	2d ".....	5 00

ART NEEDLE WORK—PROFESSIONAL.

Owner's name and post-office.	Name of article.	Premium.
Lena Strothenk, Columbus, O.....	Best display art needle work.....	\$5 00
Mrs. J. W. Davy, ".....	Best specimen.....	7 00

WOMAN'S WORK—TURKISH OR APPLIED EMBROIDERY.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best table cover.....	\$2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d ".....	1 00
same.....	Best table scarf.....	2 00
Mrs. W. R. Sprague, Brice, O.....	Best sofa pillow.....	2 00
Mrs. Jessie Hamilton, Columbus, O.....	2d ".....	1 00
same.....	Best scrap basket.....	1 00

FRENCH OR SATIN STITCH EMBROIDERY—COTTON AND LINEN.

Owner's name and post-office.	Name of article.	Premium.
M. and C. Bieber, Delaware, O.....	Best pillow shams.....	\$2 00
Mrs. L. Trimble, Marion, O.....	" six handkerchiefs.....	2 00
Mrs. W. R. Sprague, Brice, O.....	2d yoke and cuffs.....	2 00
M. and C. Bieber, Delaware, O.....	2d ".....	1 00
Mrs. E. M. Miller, Greenville, O.....	Best pair towels.....	2 00
same.....	" suit lady's underwear.....	2 00
Maggie Cunningham, Marion, O.....	2d ".....	2 00
Mrs. J. McLardy, Chillicothe, O.....	Best monogram.....	1 00
Mrs. E. M. Miller, Greenville, O.....	" display cotton and linen.....	2 00
Mrs. A. H. Morey, Marysville, O.....	2d ".....	1 00

WORSTED AND SILK AND CROSS STITCH.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best sofa pillow.....	\$2 00
Mrs. Frank Raitze, Lancaster, O.....	2d ".....	1 00
Miss Minnie Jenert, Logan, O.....	Best tidy.....	1 00
Mrs. A. P. Dewitt, Marion, O.....	Best slippers.....	1 00
Mrs. L. Trimble, Marion, O.....	" specimen.....	2 00
Mrs. A. P. Dewitt, Marion, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best display.....	5 00

WOMAN'S WORK—OUTLINE EMBROIDERY.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best pair pillow shams.....	\$2 00
same	2d ".....	1 00
M. & C. Bieber, Delaware, O.....	Best wall splasher.....	1 00
Mrs. R. H. Talbut, Cincinnati, O.....	" tray cloth.....	1 00
Mrs. E. M. Miller, Greenville, O.....	" dozen doylies.....	2 00
Mrs. W. R. Sprague, Brice, O.....	Best table cover.....	2 00
Mrs. J. B. Taggart, Lewis Center, O.....	2d ".....	1 00
Mrs. G. L. Evans, Columbus, O.....	Best table mats.....	2 00
Mrs. H. S. Tanner, Paris, Ill.....	2d ".....	1 00
Lena Strothenk, Columbus, O.....	Best mantel lambrequin.....	2 00
Mrs. Jessie Hamilton, Columbus, O.....	" pair towels.....	1 00
Mrs. L. Trimble, Marion, O.....	" specimen.....	8 00

ARABIAN EMBROIDERY.

Owner's name and post-office.	Name of article.	Premium.
Mrs. Hattie Bolander, Marion, O.....	Best table cover.....	\$2 00
Mrs. Chas. Higgins, Columbus, O.....	" fire screen.....	2 00
M. & C. Bieber, Delaware, O.....	" panel or banner.....	2 00
Mrs. Chas. Higgins, Columbus, O.....	" mantel scarf.....	2 00
Mrs. A. Alblinger, Newport, Ark.....	" sofa pillow.....	1 00
Mrs. Hattie Bolander, Marion, O.....	" display.....	5 00

BRAIDING AND LACE WORK.

Owner's name and post-office.	Name of article.	Premium.
Mrs. H. S. Tanner, Paris, Ill.....	Best pillow shams.....	\$2 00
M. & C. Bieber, Delaware, O.....	" carriage robe.....	2 00
Mrs. Chas. Higgins, Columbus, O.....	" dress.....	3 00
Mrs. M. J. Garvin, Fremont, O.....	" gold and silver thread work.....	2 00
Mrs. J. McLardy, Chillicothe, O.....	" lace collars.....	2 00
Sallie Woodward, Urbana, O.....	Best display tatting.....	2 00
Anna Libby, Sparta, Ga.....	2d ".....	1 00
Elva Turner, North Fairfield, O.....	Best lace handkerchief.....	2 00
Maggie Cunningham, Marion, O.....	2d ".....	1 00
Mrs. John Pine, Chillicothe, O.....	Best point lace.....	3 00
Sallie Woodward, Urbana, O.....	2d ".....	1 00
Mrs. B. B. Howser, Marion, O.....	Best macramé lace.....	3 00
Emma Miller, Xenia, O.....	2d ".....	1 00
Maggie Cunningham, Marion, O.....	Best guipure lace.....	2 00
Mrs. L. Trimble, Marion, O.....	2d ".....	1 00
Maggie Cunningham, Marion, O.....	Best Strasburg lace.....	2 00
same	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best display lace work.....	3 00
Sallie Woodward, Urbana, O.....	2d ".....	1 00
Mrs. B. B. Howser, Marion, O.....	2d ".....	1 00

WOMAN'S WORK—CROCHET WORK.

Owner's name and post-office.	Name of article.	Premium.
Mrs. Ella Stephens, Fredericktown, O.....	Best large afghan.....	\$3 00
Mrs. H. J. Tanner, Paris, Ill.....	2d ".....	2 00
Mrs. Chas. Higgins, Columbus, O.....	Best child's afghan.....	2 00
Mrs. L. Trimble, Marion, O.....	2d ".....	1 00
Mrs. H. S. Tanner, Paris, Ill.....	Best shawl.....	3 00
Elva Turner, North Fairfield, O.....	2d ".....	1 00
Maggie Cunningham, Marion, O.....	Best child's hood.....	2 00
Elva Turner, North Fairfield, O.....	" shoulder cape.....	2 00
Mrs. Hattie Bolander, Marion, O.....	" fascinator.....	1 00
Mrs. C. Berken, Columbus, O.....	" lady's sacque.....	2 00
Elva Turner, North Fairfield, O.....	" child's sacque.....	1 00
same.....	" leggings.....	2 00
Mrs. Jno. Pine, Chillicothe, O.....	" infant's socks.....	1 00
Fannie Fern, Groveport, O.....	" collar.....	1 00
Mrs. R. H. Talbot, Cincinnati, O.....	" chair tidy.....	1 00
Mame L. Harter, Lewis Center, O.....	" toilet set.....	2 00
Mrs. J. J. Lee, Columbus, O.....	" set table mats.....	2 00
Mrs. Chas. Higgins, Columbus, O.....	" slippers.....	1 00
Mrs. A. P. Dewitt, Marion, O.....	" purse.....	1 00
Mrs. A. H. Morey, Marysville, O.....	" skirt.....	3 00
Mrs. S. E. Tilton, North Fairfield, O.....	2d ".....	1 00
Mame L. Harter, Lewis Center, O.....	Best lace, 5 specimens.....	2 00
Mrs. L. Trimble, Marion, O.....	" display crochet work.....	7 00

PUNTO TIRATO OR DRAWN THREAD WORK.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. M. Jewel, Athens, O.....	Best aide board scarf.....	\$2 00
Mrs. C. W. Maupin, Arbuckle, W. Va.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best handkerchief.....	1 00
Mrs. L. M. Jewel, Athens, O.....	" table cover.....	2 00
Mrs. L. Trimble, Marion, O.....	" specimen.....	2 00
Mrs. E. M. Miller, Greenville, O.....	2d ".....	1 00
same.....	Best display.....	4 00
Mrs. L. Trimble, Marion, O.....	2d ".....	2 00

HOUSEHOLD ORNAMENTAL WORK.

Owner's name and post-office.	Name of article.	Premium.
Mary R. Moore, Columbus, O.....	Best hair work.....	\$2 00
Mrs. G. L. Evans, ".....	2d ".....	1 00
Mrs. E. M. Miller, Greenville, O.....	Best bead work.....	2 00
Maggie Cunningham, Marion, O.....	2d ".....	1 00
Mrs. Mary Lohr, Brice, O.....	Best moss or lichen work.....	2 00
Mrs. Ellen King, ".....	" artificial flowers.....	2 00
Mrs. Ella Stephens, Fredericktown, O.....	2d ".....	1 00
Mrs. F. M. DeWeese, Chillicothe, O.....	Best preserved flowers.....	2 00

WOMAN'S WORK—SILK OR SATIN PAINTING.

Owner's name and post-office.	Name of article.	Premium.
Mrs. J. E. Case, Delaware, O	Best painting on silk or satin.....	\$3 00
Margaret Hills, Delaware, O	2d " "	2 00
W. H. Batdorf, St. Paris, O	Best in tapestry colors.....	3 00
Mary Kiesinger, Columbus, O	2d " "	2 00
Mrs. F. E. Newcomer, Delaware, O	Best curtains tapestry painting.....	3 00
Miss Ava Main, Delaware, O	Best glove case.....	2 00
W. H. Batdorf, St. Paris, O	2d " "	1 00
Mrs. Sue Hills, Delaware, O	Best painting on velvet	3 00
W. A. House, Columbus, O	2d " "	2 00
Emma Miller, Xenia, O	Best fan on silk or satin.....	2 00
W. H. Batdorf, St. Paris, O	Best screen or banner	2 00
same	Best display painting.....	7 00
Margaret Hills, Delaware, O	2d " "	3 00

CHINA PAINTING.

Owner's name and post-office.	Name of article.	Premium.
Miss Carrie L. Hayes Columbus, O	Best portrait on china.....	
same	Best display china painting.....	
Mrs. J. W. Cobourne, Columbus, O	2d " "	
Miss Carrie Hayes, Columbus, O	Best specimen	\$3 00
same	2d " "	2 00
Mrs. J. W. Cobourne, Columbus, O	Best plaque	3 00
Miss Carrie Hayes, Columbus, O	2d " "	2 00
same	Best six plates	3 00
Mrs. J. W. Cobourne, Columbus, O	2d " "	2 00
Miss Carrie Hayes, Columbus, O	Best cups and saucers	3 00
Mrs. J. W. Cobourne, Columbus, O	2d " "	2 00
Miss Carrie Hayes, Columbus, O	Best vase or jar	3 00
same	2d " "	2 00
same	Best display Royal Worcester.....	3 00
same	Best specimen	2 00

PLANTS AND FLOWERS—AMATEUR LIST.

Owner's name and post-office.	Name of article	Premium.
Miss Jennie Coder, Marysville, O	Best collection greenhouse plants	\$10 00
Mrs. W. R. Sprague, Brice, O	" " 12 varieties.....	3 00
Mrs. W. F. Barr, Brice, O	Best specimen	5 00
Miss Jennie Coder, Marysville, O	" collection variegated plants	3 00
Mrs. W. R. Sprague, Brice, O	" specimen	3 00
M. and C. Bieber, Delaware, O	collection 10 coleus	5 00
same	" " 6	3 00
Mrs. W. R. Sprague, Brice, O	" " 10 begonias	3 00
Jennie Coder, Marysville, O	" " 6	5 00
same	" aloex and cacti	3 00
Mrs. W. R. Sprague, Brice, O	" " fuchsias	3 00
same	" " geraniums	5 00
M. and C. Bieber, Delaware, O	2d " "	3 00
Mrs. J. Arnold, Columbus, O	Best specimen	2 00
Jennie Coder, Marysville, O	" collection ferns	5 00
Mrs. W. R. Sprague, Brice, O	2d " "	2 00
M. and C. Bieber, Delaware, O	Best collection verbenas	3 00
same	" specimen	1 00
Jennie Coder, Marysville, O	" collection roses	3 00
Mrs. W. R. Sprague, Brice, O	2d " "	2 00

WOMAN'S WORK—PLANTS AND FLOWERS—AMATEUR LIST—Concluded.

Owner's name and post-office.	Name of article.	Premium.
Mrs. W. R. Sprague, Brice, O.....	Best collection trellis plants.....	\$3 00
same	Best six hanging baskets.....	5 00
Jennie Coder, Marysville, O.....	2d ".....	3 00
same	Best rustic basket.....	3 00

CUT FLOWERS.

Owner's name and post-office.	Name of article	Premium.
Mrs. E. G. Taggart, Lewis Center, O.....	Best table design.....	\$9 00
M. & C. Bieber, Delaware, O.....	2d ".....	5 00
Jennie Coder, Marysville, O.....	Best wardian case.....	5 00
C. V. Jones, Chillicothe, O.....	Best collection dahlias.....	5 00
Mrs. H. J. Hatfield, Clifton, O.....	2d ".....	3 00
C. V. Jones, Chillicothe, O.....	Best collection roses.....	3 00
M. & C. Bieber, Delaware, O.....	2d ".....	3 00
Mrs. J. Zirkle, Columbus, O.....	Best collection verbenas.....	3 00
M. & C. Bieber, Delaware, O.....	2d ".....	2 00
same	Best collection phloxes.....	2 00
Mrs. J. Zirkle, Columbus, O.....	" display asters.....	2 00
C. V. Jones, Chillicothe, O.....	" " balsams.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	" " pansies.....	2 00
M. & C. Bieber, Delaware, O.....	" " geraniums.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	" " variegated petunias.....	2 00
M. & C. Bieber, Delaware, O.....	" " carnations.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	" " gladiolus.....	2 00
C. V. Jones, Chillicothe, O.....	" " coxcombs and amaranths.....	2 00
Mrs. J. Zirkle, Columbus, O.....	" " double zinnias.....	2 00
Mrs. W. R. Sprague, Brice, O.....	Best display cut flowers.....	5 00
C. V. Jones, Chillicothe, O.....	2d ".....	3 00
M. & C. Bieber, Delaware, O.....	Best parlor bouquets.....	2 00
Mrs. J. Zirkle, Columbus, O.....	Best collection native flowers.....	2 00
Mrs. A. L. Perry, Lewis Center, O.....	2d ".....	2 00

PRESERVES, PICKLES, ETC.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best canned tomatoes.....	\$2 00
Mrs. E. Smith, Midland City, O.....	2d ".....	1 00
Mrs. Mary Stewart, Atherton, O.....	Best blackberries.....	2 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	2d ".....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best raspberries.....	2 00
Mrs. Emma Howser, Marion, O.....	2d ".....	1 00
D. F. Corwin, Springboro, O.....	Best peaches.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best pears.....	2 00
Mrs. L. Swickard, Westerville, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best apples.....	2 00
M. & C. Bieber, Delaware, O.....	2d ".....	1 00
Mrs. M. J. House, Cardington, O.....	Best quinces.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d ".....	1 00
Mrs. M. J. House, Cardington, O.....	Best strawberries.....	2 00
Mrs. L. Swickard, Westerville, O.....	2d ".....	1 00

WOMAN'S WORK—PRESERVES, PICKLES, ETC.—Concluded.

Owner's name and post-office.	Name of article.	Premium.
Mrs. L. Trimble, Marion, O.....	Best cherries.....	\$2 00
Mrs. E. Smith, Midland City, O.....	2d ".....	1 00
Mrs. M. J. House, Cardington, O.....	Best gooseberries.....	2 00
Mrs. Thos. Pool, Reynoldsburg, O.....	2d ".....	1 00
Laura A. Eyer, Dodds, O.....	Best currants.....	2 00
Mrs. H. Bieber, Delaware, O.....	2d ".....	1 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best grapes.....	2 00
Mrs. E. Smith, Midland City, O.....	2d ".....	1 00
Mrs. G. N. Toops, Chillicothe, O.....	Best plums.....	2 00
Mrs. Emma Houser, Marion, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best peas.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best variety canned fruit.....	5 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	3 00
Mrs. Emma Houser, Marion, O.....	Best variety pickles.....	5 00
Laura A. Eyer, Dodds, O.....	2d ".....	3 00
Mrs. L. Trimble, Marion, O.....	Best varieties jellies.....	5 00
Mrs. E. Smith, Midland City, O.....	2d ".....	3 00
Mrs. Emma Houser, Marion, O.....	Best blackberry jelly.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best gooseberry jelly.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best grape jelly.....	2 00
Mrs. L. Trimble, Marion, O.....	2d ".....	1 00
Mrs. Emma Houser, Marion, O.....	Best plum jelly.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. L. Trimble, Marion, O.....	Best apple jelly.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d ".....	1 00
Mrs. H. Bieber, Delaware, O.....	Best crab jelly.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. Thos. Poole, Reynoldsburg, O.....	Best currant jelly.....	2 00
Mrs. H. Bieber, Delaware, O.....	2d ".....	1 00
same	Best peach jelly.....	2 00
Ava Main, Delaware, O.....	2d ".....	1 00
L. M. Gregg, Springboro, O.....	Best quince jelly.....	2 00
Mrs. W. J. Carty, Columbus, O.....	2d ".....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best preserved quinces.....	2 00
Mrs. Mary Stewart, Atherton, O.....	2d ".....	1 00
same	Best pear preserves.....	2 00
Laura A. Eyer, Dodds, O.....	2d ".....	1 00
Mrs. G. N. Toops, Chillicothe, O.....	Best apple jelly.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
Mrs. A. L. Perry, Lewis Center, O.....	Best plum jelly.....	2 00
Laura A. Eyer, Dodds, O.....	2d ".....	1 00
Ava Main, Delaware, O.....	Best grape jelly.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d ".....	1 00
Mrs. A. L. Perry, Lewis Center, O.....	Best strawberry jelly.....	2 00
Mrs. L. Trimble, Marion, O.....	2d ".....	1 00
Mrs. M. J. House, Cardington, O.....	Best blackberry jelly.....	2 00
Mrs. A. L. Perry, Lewis Center, O.....	2d ".....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best peach preserves.....	2 00
Laura A. Eyer, Dodds, O.....	2d ".....	1 00
Mrs. A. L. Perry, Lewis Center, O.....	Best tomato catsup.....	2 00
Mrs. L. Trimble, Marion, O.....	2d ".....	1 00
Mrs. M. J. House, Cardington, O.....	Best cucumber catsup.....	2 00
Mrs. E. G. Taggart, Lewis Center, O.....	2d ".....	1 00
Mrs. Mary Stewart, Atherton, O.....	Best pickled cucumbers.....	2 00
Mrs. G. N. Toops, Chillicothe, O.....	2d ".....	1 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best pickled peaches.....	2 00
Mrs. E. Smith, Midland City, O.....	2d ".....	1 00
same	Best peck tomatoes.....	2 00
Mrs. Mary Stewart, Atherton, O.....	2d ".....	1 00
Ava Main, Delaware, O.....	Best peck mangoes.....	2 00
Mrs. Mary Stewart, Atherton, O.....	2d ".....	1 00
Mrs. H. Bieber, Delaware, O.....	Best peck melons.....	2 00
Mrs. E. Smith, Midland City, O.....	2d ".....	1 00
Mrs. E. G. Taggart, Lewis Center, O.....	Best peck onions.....	2 00
Mrs. Emma Houser, Marion, O.....	2d ".....	1 00
same	Best peck gherkins.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00

WOMAN'S WORK—BREAD AND CEREAL FOOD.

Owner's name and post-office.	Name of article.	Premium.
Mrs. M. J. House, Cardington, O.....	Best domestic yeast bread.....	\$2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00
M. and C. Bieber, Delaware, O.....	Best salt rising bread.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00
Mrs. W. J. Carty, Columbus, O.....	Best corn bread.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00
Mrs. W. J. Carty, Columbus, O.....	Best rye bread.....	2 00
Laura A. Eyer, Dodds, O.....	2d ".....	1 00
Mrs. Mary Maxwell, Reynoldsburg, O.....	Best brown bread.....	2 00
Mrs. M. J. House, Cardington, O.....	2d ".....	1 00
same	Best Graham bread.....	2 00
Laura A. Eyer, Dodds, O.....	2d ".....	1 00
M. and C. Bieber, Delaware, O.....	Best sponge cake.....	2 00
C. R. Black, Powell, O.....	2d ".....	1 00
L. M. Gregg, Springboro, O.....	Best raised biscuit.....	2 00
Mrs. Thos. Poole, Reynoldsburg, O.....	2d ".....	1 00

FINE ARTS.

DRAWINGS, PAINTINGS, ETC.—PROFESSIONAL.

Owner's name and post-office.	Name of article.	Premium.
Miss H. I. Coman, Columbus, O	Best life size oil portrait	\$10 00
Samuel L. Fuller, Columbus, O	" portrait of horse, bull or cow	10 00
Herman Baker, Columbus, O	" oil painting (original)	10 00
same	" landscape from nature	10 00
Miss H. I. Coman, Columbus, O	" fruit, flower or object	5 00
Herman Baker, Columbus, O	" exhibition oil paintings	20 00
Miss Josephine Kilpart, Columbus, O	" paintings in water colors	10 00
same	" landscape water colors	10 00
same	" fruit, flower or object	5 00
same	" exhibition water color paintings	15 00

OIL PAINTINGS —AMATEUR LIST.

Owner's name and post-office.	Name of article.	Premium.
Mary E. Hess	Best oil painting from copy	\$3 00
Conn Baker, Columbus, O	" landscape from nature	5 00
Mrs. W. H. Welsh, Columbus, O	" landscape from copy	3 00
same	" figure from copy	3 00
J. R. Hatfield, Clifton, O	" fruit or flower (original)	5 00
May Kilroy, Columbus, O	" fruit or flower from copy	3 00
same	" 3 panel fire screen	5 00
Mrs. W. H. Welsh, Columbus, O	" 1 panel fire screen	3 00
Gertrude Zimmer, Shepard, O	" exhibition paintings	10 00

WATER COLORS—AMATEUR LIST.

Owner's name and post-office.	Name of article.	Premium.
Margaret Hills, Delaware, O	Best specimen painting	\$5 00
same	" " from nature	5 00
same	" landscape from copy	5 00
Miss Grace Ewing, Columbus, O	" fruit or flower from nature	5 00
same	" " copy	3 00
Miss A. English, Columbus, O	" still life	5 00
Margaret Hills, Delaware, O	" exhibition paintings	10 00

FINE ARTS—DRAWING—AMATEUR LIST.

Owner's name and post-office.	Name of article.	Premium.
Miss A. English, Columbus, O.....	Best shaded charcoal drawing.....	\$3 00
Miss Grace Ewing, ".....	" study drawing from copy.....	2 00
Miss Laura E. Stoner, Columbus, O.....	" display drawings	1 00

PHOTOGRAPHS AND MISCELLANEOUS.

Owner's name and post-office.	Name of article.	Premium.
Ward Bros., Columbus, O	Best lithograph	Dip.
Miss Ollie Shurtz, Columbus, O.....	" specimen penmanship.....	Dip.
same	" pencil drawing.....	Dip.
Wolf Bros., Columbus, O.....	" display job printing.....	Sil M.

SCULPTURE, ETC.

Owner's name and post-office.	Name of article.	Premium.
Christina Miller, Columbus, O.....	Best display wood carving	\$10 00
Miss A. Rankin, "	2d	5 00
Harry N. Young, "	Best panel hammered brass.....	2 00
Mrs. Mary McLardy, Chillicothe, O.....	" frame	2 00
Harry N. Young, Columbus, O.....	" specimen	2 00
same	" display repousse work.....	5 00

SCULPTURE OR MODELING.

Owner's name and post-office.	Name of article.	Premium.
Mrs. A. P. Hiller, Columbus, O.	Best original design.....	\$5 00

DENTISTRY.

Owner's name and post-office.	Name of article.	Premium.
Robinson & Lentz, Columbus, O.....	Best general display dentistry and dental appliances	Sil. M.

NON-PREMIUM DEPARTMENTS.

In the departments of machinery and agricultural implements, mechanics' and manufacturers' products, music and merchandise, no premiums were offered. The exhibits were numerous, the departments being completely filled with a class of worthy articles and displays that elicited much commendable praise.

Following is a list of the exhibitors :

AGRICULTURAL IMPLEMENTS, MACHINERY, ETC.

J. B. Merideth.....	Columbus, O.....	Moline plow.
Deere & Co.....	Moline, Ill.....	Plows, cultivators, harrows and sulkeys.
Deere & Mansur Co.....	Moline, Ill.....	Planters' disc, harrows and hay loaders.
Johnson Harvester Co.....	Batavia, N. Y.....	Binder, reaper, mower-disk cultivator, etc.
Franklin Buggy Co.....	Columbus, O.....	Buggies and vehicles.
G. H. Grimm M'fg Co.....	Hudson, O.....	Champion evaporator.
Columbus Cart Co.....	Columbus, O.....	Buggies, road wagons, carts and wheels.
Buckeye Cart Co.....	Columbus, O.....	Two-wheeled vehicles.
Western Union Chemical Co.....	Cleveland, O.....	Fertilizers.
Cincinnati Desiccating Co.....	Cincinnati, O.....	"
The Cleveland Dryer Co.....	Cleveland, O.....	"
Loudenback Fertilizer Co.....	Urbana, O.....	"
Walker, Stratman & Co.....	Allegheny, Pa.....	"
Columbus Carriage Co.....	Columbus, O.....	Wagons and buggies.
McSherry M'fg Co.....	Dayton, O.....	Grain drills and disc harrows.
Hoover & Gamble.....	Miamisburg, O.....	Harvester and mower.
J. I. Case Plow Works.....	Racine, Wis.....	Agricultural implements.
Oliver Chilled Plow Co.	South Bend, Ind.....	Steel chilled plows and sulkeys.
F. E. Myers & Bros.....	Ashland, O.....	Myers pumps and hay tools.
Bucher & Gibbs Plow Co.....	Canton, O.....	Gibbs' imperial plows, harrows, etc.
D. M. Osborne & Co	Auburn, N. Y.....	Binders, mowers and rakes.
Newark Machine Co.....	Columbus, O.....	Clover hullers, manure spreaders and straw stackers, etc.
Farmers' Friend M'fg Co.....	Dayton, O.....	Grain drills, spring tooth corn planters, etc.
Stoddard Manufacturing Co.....	Dayton, O.....	Mowers, disc, harrows, press, drills, etc.
Rock Island Plow Co.....	Rock Island, Ill.....	Plows, hay-loaders, cultivators, etc.
Hoosier Drill Co.....	Richmond, Ind.....	Grain and corn drills, seeders and hay rakes.
Economist Plow Co.....	South Bend, Ind.....	Solid comfort sulkey and gang plows.
Keystone Manufactur'g Co.....	Sterling, Ill.....	Corn planters, disc, harrows, hay rakes, etc.

Mast, Foos & Co.	Springfield, O.	Pump windmills, lawn mowers and iron fence.
P. P. Mast & Co.	Springfield, O.	Hay rakes, cultivators, grain drills and cider mills.
Wayne Works	Richmond, Ind.	Grain drills, carts and wagons.
Eureka Mower Co	Utica, N. Y.	Mowers, spring tooth harrows and cultivators.
Brown Manufacturing Co.	Zanesville, O.	Wagons, cultivators and harrows.
Courtland Wagon Co.	Courtland, N. Y.	Wagons, buggies, etc.
Brown-Manly Plow Co.	Malta, O.	Shovel-plows and cultivators.
Cring Bros.	Westerville, O.	Stump-pullers, Storm King wind-mills.
H. L. Bennett & Co.	Westerville, O.	Stump-pullers and folding table.
R. Lean & Son	Mansfield, O.	Steel harrows.
I. F. Seiberling & Co.	Akron, O.	Binders, mowers, droppers, etc.
Amos Whiteley & Co.	Springfield, O.	Binders, mowers, hay rakes and tedders.
Page Woven Wire Fence Co	Adrain, Mich	Wire fencing.
Ohio Fence Co.	Dayton, O.	Wire fencing and wire locks.
Whitman Baler	St. Louis, Mo.	Hay baler, etc.
P. K. Deitrich	Albany, N. Y.	Hay baler and hoisting machine.
The Quincy Baling Press Co.	Quincy, Ill	Hay balers.
Elliott, Reid & Co.	Richmond, Ind.	Fencing and machines.
Empire Fence Machine Co.	"	Fence machine.
King Weaver	Service, Pa	Fencing.
Sherman's F'm Gate Hanger	Kettle, W. Va.	Gates.
John C. Catlin	Miner, Ill.	Farm gates.
O. K. Hay Bailer	Kansas City, Mo.	Hay press.
Sedgwick Bros. Co.	Richmond, Ind.	Wire woven fence.
S. S. Alspach	Thornville, O.	Farm gates.
I. W. Buchanan	Smithville, O.	Wire fences.
C. F. Wickman	Waterloo, Iowa.	Eureka tubular gate.
Jones National Fence	Columbus, O.	Lock and wire fence.
A. W. Smith	Troy, O.	Hawkeye fence.
I. S. Crampton	Richmond, Ind.	The Little Giant jr. fence.
D. Mahoney	Lansing, Mich.	Lansing patent fence.
L. F. Craven	Martinsville, O.	Superior fence machine.
F. F. Merritt	Cleveland, O.	Triumph fence machine.
I. C. Kremer	Wadsworth, O.	Farmer's friend fence machine.
C. E. Newman	Laura, O.	Standard smooth fence.
Miller Fence Machine	Somerset, O.	Fence machine.
L. C. Loudon	Indianapolis, Ind.	Louden's perfection picket fence machine.
I. W. Calhoun	Ashland, O.	Ashland fence machine.
American Road Mach. Co.	Kennett Square, Pa.	Road-scrapers.
American Harrow Co.	Detroit, Mich.	Harrows.
Advance Thresher Co.	Battle Creek, Mich.	Threshing machine and engine.
Hydraulic Cider Mill	Mt. Gilead, O.	Superior hydraulic cider press.
Avery Planter Co.	Peoria, Ill.	Corn-planters.
S. L. Allen & Co.	Philadelphia, Pa.	Farm and garden implements.
Amoter Co.	Chicago, Ill.	Wind mills.
Bissell Chill Plow Co	South Bend, Ind.	Chilled plows.
Bradley Holton Co.	Indianapolis, Ind.	Plows.
Capital City Machine Co.	Columbus, O.	Machine and nozzels.
W. Cadwell	Tecumseh, Mich.	Wagon rack.

John S. Carter.....	Syracuse, N. Y.....	Creamery machinery.
Dayton Implement Co.....	Dayton, O.....	Farm and garden implements.
H. P. Dusher & Co.....	Hamilton, O.....	Land rollers and corn-planters, etc.
Deeds & Co.....	Wilmington, O.....	Pulverizers.
Davis Platform Binder Co....	Cleveland, O.....	Binders and harvesters.
A. C. Evans M'fg Co.....	Springfield, O.....	Farm implements.
D. Elliott & Reed Co.....	Richmond, Ind.....	Picket and wire fence looms.
Eagle Machine Co.....	Lancaster, O.....	Cutting boxes.
S. P. Castle.....	Urbana, O.....	Corn-cutter.
E. M. Freese & Co.....	Plymouth & Galion, O.	Brick and tile machine.
Gale M'fg Co.....	Albion, Mich.....	Farm implements.
F. M. Gibson.....	Good Hope, O.....	Dump cart.
Genesee M'fg Co.....	Mt. Morris, N. Y.....	Land rollers and drills.
E. K. Hays & Co.....	Galva, Ill.....	Grain weigher and bagger, planter's pumps, shoveling boards and scales, etc.
W. R. Harrison & Co.....	Canton, O.....	Feed cutters.
Hocking Valley M'fg Co....	Lancaster, O.....	Cider presses, feed mills and farm implements.
Long & Alstatter Co.....	Hamilton, O.....	Harrows, rakes, etc.
C. J. Miller.....	Marion, O.....	Vegetable cutter.
The Jonathan Mills M'fg Co.	Columbus, O.....	Mill machinery.
I. H. McKinney.....	Turtle Creek, Penn.....	Churns.
Nova M'fg Co.....	Nova, O.....	Wagons.
Ohio Cultivator Co.....	Bellevue, O.....	Cultivators and plows.
Ohio Rake Co.....	Dayton, O.....	Horse hay rakes.
Pitts Agr'l Works.....	Buffalo, N. Y.....	Cultivators.
Bude Bros.....	Liberty, Ind.....	Farm and garden drills.
L. F. Ralston.....	Curtiles, O.....	Wagon tire setters.
South Bend Chilled Plow Co.	South Bend, Ind.....	Plows.
A. H. Sturdevant & Co.....	Indianapolis, O.....	Wagons, pumps and farm implem'ts
Smalley M'fg Co.....	Manitowac, Wis.....	Cultivators and plows.
Superior Land Roller Co....	Covener, N. Y.....	Land rollers.
Syracuse Chilled Plow Co...	Syracuse, N. Y.....	Plows.
Troy Wagon Co.....	Troy, O.....	Wagons and buggies.
A. P. Thompson.....	Columbus, O.....	Steam connection.
Totten & Hogg.....	Pittsburg, Pa.....	Stone crusher.
Isaac Potts.....	Columbus, O.....	Patent steam pipe fitting.
Variety Iron Works.....	".....	Iron fencing, springs and bicycles.
Weard Plow Co.....	Batavia, N. Y.....	Plows and hay-rakes.
J. R. West.....	Avon, O.....	Tire setter.
Chase Bros.....	Findlay, O.....	Patent gate.
J. G. Ashley.....	Auburn, O.....	Wind engines, harrows and mola- traps.
I. N. Engless & A. T. Mow- bray.....	Toledo, O.....	Wind engines.
Myers & Trump.....	Kalamazoo, Mich.....	Wind engines, tanks and fixtures.
O. T. Bolton.....	Mechanicsburg, O.....	Royal Scale Rack Co.
F. K. Cosgrove.....	Mishawakee, Ind.....	Perkins wind mill.
Will Bryson.....	Chicago, Ill.....	Air motor wind mill.
Henry Boozer.....	Mansfield, O.....	Star wind engine.
Flint & Walling M'fg Co...	Kendallville, Ind.....	Hosiery pumps.
J. H. F. Browing.....	Columbus, O.....	Huber engine and separator.
Frank Eves.....	Cleveland, O.....	Cripples revenge separator.
Nicholas & Sheppard.....	Battle Creek, Mich.....	Vibrator thresher.

L. N. Patterson	Mansfield, O.....	Nicholas & Sheppard vibrator separator.
M. Rumely Co.....	Laporte, Ind.....	New Rumely thresher and engine.
Russell & Co	Massillon, O	Engine, thresher and stacker separator.
Burdsell M'fg Co.....	South Bend, Ind	Clover huller.
B. Scheidler.....	Newark, O.....	Engines, separators and saw mills.
Geiser M'fg Co	Waynesboro, Pa.....	Engines, separators and saw mills.
W. S. & J. D. Anderson.....	Dayton, O	Duster and blower.
Gaar, Scott & Co.....	Richmond, Ind.....	Steam engines, separators and clover hullers.
Geo. A. Douglass	Battle Creek, Mich.....	Threshers, engines and stackers.
Famous Manufacturing Co.....	Chicago, Ill.....	Hay presses.
Marion Manufacturing Co.....	Marion, O.....	Engines and threshers.
Reeves Pully Co.....	Columbus, Ind.....	Hay press pulleys.
Reeves & Co.....	Columbus, Ind.....	Clover hullers, stackers and feeders.
The Foos Manufactur'g Co.....	Springfield, O	Feed mills and corn harvesters.
N. P. Bowsher.....	South Bend, Ind.....	Feed mills.
I. C. Woodcock & Co	Upper Sandusky, O.....	Feed mills and threshers.
Common Sense Engine Co.....	Springfield, O.....	Feed mills, engines, boilers and hay rakes.
Enterprise M'fg Co	Columbiana, O.....	Saw mills, engines and feed grinders.
Star Manufacturing Co.....	New Lexington, O.....	Feed mills.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

E. E. Barnhart.....	Columbus, O.....	Fancy illuminating oil wagon.
Milton Westlake.....	Zanesville, O.....	Glass engraving.
J. W. Munk.....	Columbus, O.....	Kitchen cabinet.
M. Brobst & Co.....	Columbus, O.....	Patent washing machine.
B. Suffron & Co.....	Peebles, O.....	Patent chimney and stove flue.
The Cycle Co.....	Columbus, O.....	Bicycles.
C. W. James.....	Quincy, O.....	Patent harness loop and breaststrap.
H. W. Wayne	Decatur, Ill.....	Patent road and track sulky.
Matlack & Bellows.....	Columbus, O.....	Harness, saddles, etc.
S. Toomey & Co.....	Canal Dover, O.....	Track sulky.
B. G. Nash.....	Xenia, O.....	Patent spring washing machine.
J. E. Courtwright, agent.....	Dayton, O.....	Patent computing scales.
J. Hain.....	Columbus, O.....	The Mossler & Baughman safes.
The Buggy M'fg Co.....	Columbus, O.....	Buggies.
The Smith Bros. Hardware Co	Columbus, O.....	Shelf, hardware, etc.
— Newton, Agent.....	Columbus, O.....	Horseford's baking powder.
— Sherwood	"	Bicycles.
E. B. Armstrong.....	"	Stoves, tinware and furnaces.
Ol. Awning & Tent Co.....	"	Awnings and tents.
H. Gilbert Hart Co.....	"	Heating furnaces.
The Stone M'fg Co	"	Clothes wringers (iron).
E. Reese.....	Chillicothe, O.....	Novelties in iron.
Avery & Casner.....	Columbus, O	Bicycles.
The Harterfine Flour Co.....	Fostoria, O.....	Patent process flour.
The Ohlen Saw Works.....	Columbus, O.....	Circular and cross-cut saws.
Geo. M. Rewell & Co.	Cleveland, O.....	Patent dish washer.
Geo. R. Moon.....	Wilmington, O.....	Patent heating stove.
A. L. Yardley.....	Columbus, O.....	Patent washing machine and churns.

G. W. Wilson.....	Columbus, O.....	Patent power motor.
The Columbus Wheel Co....	"	Patent buggy wheels.
J. L. Southcomb.....	"	Iron and wire screens.
J. B. Lott.....	"	Iron tubular buggy wheels.
Columbus Buggy Co.....	"	Buggies and carriages.
Buckeye Buggy Co.....	"	"
Franklin Buggy Co.....	"	"
Walborn & Riker.....	St. Paris.....	Pony phaetons.

MERCHANDISE, MUSIC, ETC.

Krauss & Meehan.....	Columbus, Ohio ..	Carpets, curtains, etc.
McAllister, Mohler & Co....	"	Furniture and upholstery.
D. H. Baldwin & Co.....	"	Pianos and organs .
Elliott Bros.....	"	Cakes, bread, candies, etc.
Stettner & Koch..	"	Musical instruments, etc.
Leon Bros	"	Furniture, carpets, etc.
Cherrington Printing and Engraving Co.....	"	Seals, rubber stamps, checks, etc.
A. L. Yardley.....	"	Willow and wood ware.
Saratoga Chip & Egg Noodle Co	"	Saratoga chips and noodles.
D. M. Moore & Oates	"	Tailors and gents' furnisners.
Hammond Batterson.....	"	Wall paper and fine wall decora- tors.
Combination Folding Bath Tub Co.....	Marshall, Mich	Folding and chair bath tubs.
The American Writing Ma- chine Co.....	Hartford, Conn.....	Type writers and supplies.
S. H. Kerins & Co	Columbus, Ohio.....	Bibles, albums, etc.
Kerner Bros.....	St. Louis, Mo	Sole leather walking canes.
Consolidated Time Lock Co.....	Cincinnati, O.....	Fine locks, three styles.
Amberg & Williams..	Columbus, O.....	Perfect rest bed spring.
Eureka Cash Register Co., Knoxville, Pa., A. L. Ham- ilton, Gen. Agt	Chillicothe, O.....	Eureka self reckoning pass book system.
Roberts & West, Cleveland, O., W. H. B. Williams, State Agt	Columbus, O.....	Chloro-naphthol'm disinfecting fluid.
W. A. Phelps	Parkersburg, W. Va.....	Satin spar.
Miss Etta Joslin.....	Boston, Mass.....	Rubber vacuum arrow parlor game.
George D. Freeman.....	Columbus, O.....	Mantels and grates.

REPORT OF DAIRY TEST, 1891.

To the Ohio State Board of Agriculture:

Your committee are glad to report that in the State dairy test for 1891 the Shorthorn Breeders' Association offered such a liberal prize that two breeders of that strain of animals entered cows to compete for first and second premiums.

Your committee, however, were greatly surprised that only two cows out of the countless number of shorthorns within the State were considered capable of competing for such a magnificent premium. Surely some of these breeders will be tempted to bring out their stock by another year, if they are told that one of the cows entered this year was giving but about thirteen pounds of milk per day. One thing is certain, that they must either show a good many better cows next year or suffer this year's entries to stand as an example of their productions.

The Holstein breed was represented by a single cow, and that one from another State. The Red Polls were represented by two most excellent specimens of that breed. The Jerseys, Ayrshires, Herfords and some other good breeds were notably absent.

There were but four entries for the general test: two Red Polled, one Shorthorn and one Holstein.

According to instructions the committee saw the cows milked on Monday evening at 5:30 and were satisfied that it was thoroughly done. The competitors were then instructed to feed their cows as had been their custom, but the milking must be done in the show ring at 6 o'clock in the morning and at 5:30 in the evening of Tuesday, Wednesday and Thursday. This was done in the presence of the committee, the milk weighed and record made at the same time and place. Samples of each cow's milk were taken on Tuesday evening and again on Wednesday morning. These samples were thoroughly mixed and from them duplicate samples were drawn and the analysis made by Prof. H. A. Weber, of the Ohio State University. The report returned by him was as follows:

MILK ANALYSIS FOR THE STATE BOARD OF AGRICULTURE, SEPTEMBER 16, 1891.

Number of sample	Total solids.	Fat.	Solids not fat.
1.....	12.59	3.65	8.94
2.....	13.39	3.07	9.82
3.....	12.80	3.21	8.09
4.....	14.30	4.46	9.84

H. A. WEBER, *Chemist.*

The samples for analysis were numbered as above, and are explained below:

- No. 1, Shorthorn, Bracelet 2d.
- No. 2, Red Polled, Lady of Tittleshall.
- No. 3, Holstein, Shadeland Otley.
- No. 4, Red Polled, May Flower.

The rules require that each owner making entries for this test shall submit a sworn statement, giving the age of the cow and date of calving; also the kind of food given, and manner of feeding two weeks prior to the fair. From these statements I have copied the following:

MAY FLOWER, owned by V. T. Hills, Delaware, Ohio, aged seven years; dropped her last calf June 16, 1891. During the two weeks preceding the fair she was fed the following grain rations: Eight pounds of bran, eight pounds of crushed or ground oats, three pounds of linseed meal daily in three feeds, the smaller one at noon. Besides the grain ration she has had all the hay and corn fodder she would eat, and from a peck to a half bushel of beets per day, and running on pasture a part of the time.

BRACELET 2d: Owned by S. Hanna & Son, Unionvale, Ohio; color, red with small spots of white; born January 19, 1881; recorded in American herd book, vol. 26; dropped her last calf August 14, 1891; has not been bred since. Since September 1st, this cow has run on grass and consumed about five quarts of chop twice a day, consisting of equal parts of oats, corn and wheat bran; also some sweet corn fodder and one pint of flax-seed meal twice daily.

SHADELAND OTLEY: Owned by Stevenson Bros., Bulger, Pa.; herd book No. 9066; nine years old; date of last calving April 13, 1891; food consumed two weeks prior to the fair: Twenty-two pounds per day of bran and chop, corn and oats mixed, about two-thirds bran to one-third chop, together with a small amount of oil meal and all the hay she would consume. She was kept in the stable from August 11th to August 20th in preparation for the fairs. Since August 20th she has been in constant attendance at fairs.

LADY OF TITTLESHALL: No. 3539, owned by J. McLain Smith, Dayton, Ohio. Cow was calved March 23, 1883, and was last fresh August 8, 1891. Prior to leaving home she was on pasture (very short) and was fed a peck of bran and malt sprouts, equal parts, twice a day; also at each feed about a pound of oil cake meal mixed with a little dry bran. Since leaving home she has been fed about the same ration three times a day, with hay in lieu of grass, and about a quart of oats at each feed.

BRACELET: Owned by S. Hanna & Son, was entered for the general test and also for the Shorthorn special.

The results as given below were calculated from the weights of milk as recorded from the analysis as given above, and from data concerning time of cow's calving according to the following rules: One point for every pound of milk; twenty points for every pound of butter fat; four points for every pound of other solids; one point for every ten days since calving, after the first twenty days. Below will be found specific data for each cow in the contest:

COW PRODUCING GREATEST AMOUNT OF BUTTER FAT.

Three entries, with results as follows:

	Points.
May Flower, 515 pounds of butter fat.....	103.05
Shadeland Otley, 3.49 " "	69.80
Lady of Tittleshall, 3.72 " "	74.46
May Flower, first premium.	
Lady of Tittleshall, second premium.	

COW PRODUCING GREATEST AMOUNT OF SOLIDS, INCLUDING FAT.

Four entries.

May Flower—	
Fat produced, 5.15 pounds.....	103.05
Solids not fat.....	45.39
	<hr/>
	148.44
Shadeland Otley—	
Fat produced, 3.49 pounds.....	69.80
Solids not fat.....	41.71
	<hr/>
	111.51
Lady of Tittleshall.	
Fat produced, 3.72 pounds.....	74.46
Solids not fat.....	40.88
	<hr/>
	115.34
Bracelet—	
Fat produced, 3.90 pounds.....	78.10
Solids not fat.....	38.23
	<hr/>
	116.33
May Flower, first premium.	
Bracelet, second premium.	

COW PRODUCING GREATEST AMOUNT OF MILK.

One entry.

Shadeland Otley—	
Number of pounds of milk.....	108.75
Days since calving, points.....	13.50
	<hr/>
	122.25

SWEEPSTAKES—COW PRODUCING GREATEST AMOUNT OF MILK, INCLUDING FAT AND SOLIDS.

Three entries.

May Flower (Red Polled)—	
	Points.
Score of points for milk production.....	115.37
" " " " fat.....	103.05
" " " " solids not fat.....	45.39
" " " " days since calving.....	7.10
	<hr/>
	270.91

Shadeland Otley (Holstein)—

Score of points for milk production.....	108.75
" " " " fat.....	69.80
" " " " solids not fat.....	41.71
" " " " days since calving	13.50
	<hr/>
	233.76

Lady of Tittleshall (Red Polled)—

Score of points for milk production.....	104.12
" " " " fat.....	74.46
" " " " solids not fat.....	40.88
" " " " days since calving.....	1.70
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	221.16

May Flower, first premium.**Shadeland Otley, second premium.****Respectfully submitted.****J. FREMONT HICKMAN.**

SHORTHORN DAIRY TEST, 1891.

Copy of report made to American Shorthorn Association for special premium offered by the American Shorthorn Breeders' Association.

To the Ohio State Board of Agriculture:

Your committee are sorry to have to report but two cows in the Shorthorn test for this year.

According to instructions the committee saw the cows milked on Monday evening at 5.30 and were satisfied that it was well and thoroughly done. The cows were milked on Tuesday and Wednesday mornings at 6 o'clock and in the evenings of the same days at half past five. Each milking was done in the show ring, the milk weighed and records made in the presence of the committee. Samples for analysis were taken from the evening milking of Tuesday and from the morning milking of Wednesday. These two samples were put together and thoroughly mixed. From this mixture duplicate samples were taken and the fat determined by Babcock's method.

The two cows entered for this test were Bracelet 2d and Ellie. Bracelet 2d, owned by S. Hanna & Son, Unionvale, Ohio, was calved January 19, 1881; recorded in American herd book, vol. 26; dropped her last calf August 14, 1891. Ellie, owned by C. W. Edenfield, Sugar Tree Ridge, Ohio; record in full in American herd book, vol. 36.

In the two days' milking Bracelet 2d gave seventy-three pounds of milk, showing when tested 3.8 per cent of fat; giving for the two days two and seventy-seven hundredths (2.77) pounds of butter fat. Ellie gave twenty-six and twenty hundredths pounds of milk, showing 3.1 per cent of fat; aggregating for the two days .81 pounds of butter fat, or a little more than four-fifths of a pound.

Your committee consider that Bracelet is worthy of the first premium, but that the small quantity of milk given by Ellie should bar her from receiving any award. Affidavits were presented to committee and forwarded to Mr. J. H. Pickerill, Chicago, October 1, 1891.

Respectfully submitted.

J. FREMONT HICKMAN,
B. B. HERRICK.

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1891.

TABLE I.—COUNTY FAIRS IN OHIO FOR 1891.

Counties.	President.	Post-office.	Treasurer.	Post-office.
Adams	Dr. W. K. Coleman	West Union	Henry Scott	West Union.
Allen	L. L. Helsier	Herring	T. C. Calvert	Lima.
Ashland	R. J. Simonton	Ashland	J. T. Reaser	Ashland.
Ashabula	B. A. French	Lenox	D. S. Downing	Jefferson.
Athens	Joseph Jordan	Athens	H. H. Wickham	Athens.
Auglaize	John A. Werst	Wapakoneta	James Wilson, Jr.	Wapakoneta.
Belmont	John B. Hoge	St. Clairsville	E. G. Amas	St. Clairsville.
Brown	J. P. Richards	Georgetown	E. F. Blair	Georgetown.
Butler	Thos. V. Howell	Hamilton	F. W. Whitaker	Hamilton.
Carroll	Geo. Bothwell	Carrollton	T. J. Saltzman	Carrollton.
Champaign	C. H. Ganson	Urbana	A. F. Vance, Jr.	Urbana.
Clark	D. O. Frantz	Springfield	Wm. H. Crabill	Springfield.
Clermont	R. D. Sapp	Baldwin	G. Bordwell	Batavia.
CClinton	H. P. Malone	New Vienna	J. W. Denver, Jr.	Wilmington.
Columbiana	L. S. Lyder	East Fairfield	Lemuel Scoville	New Lisbon.
Coshocton	A. M. Dinsmore	Coshocton	J. L. Rue	Coshocton.
Crawford	J. H. Keiser	Sulphur Springs	J. H. Robinson	Bucyrus.
Darke	J. M. Brown	DeLisle	F. M. Eidson	Greenville.
Delaware	John H. Warren	Warrensburg	V. D. Stayman	Delaware.
Erie	Chas. L. House	Sandusky	F. P. Zollinger	Sandusky.
Fairfield	John Ariz	North Berne	A. I. Vorys	Lancaster.
Fayette	L. C. Mallow	Washington O. H.	Thos. W. Merchant	Washington O. H.
Fulton	L. G. Ely	Fayette	J. W. Howard	Winameg.
Gallia	E. Betz	Gallipolis	A. Betz	Gallipolis.
Geauga	F. S. Morris	Chardon	H. C. Tuttle	Burton.
Greene	J. B. Lucas	Xenia	T. L. Maginder	Xenia.
Guernsey	John Kester	Salesville	R. S. Frame	Washington.
Hamilton	Albert French	Cincinnati	N. S. Buxton	Pleasant Ridge.

TABLE I.—COUNTY FAIRS IN OHIO FOR 1891—Concluded.

Counties.	President.	Post-office.	Treasurer.	Post-office.
Hardin.....	J. B. Humphrey.....	Kenton.....	W. W. Stevenson.....	Kenton.
Harrison.....	Charles M. Hogg.....	Cadiz.....	W. S. Cessna.....	Cadiz.
Highland.....	Isaac Larkin.....	Hillsboro.....	Wm. D. Linn.....	Hillsboro.
Hocking.....	Henry Trimmer.....	Logan.....	R. O. Kittsmiller.....	Logan.
Holmes.....	Prof. John A. McDowell.....	Millersburg.....	Chas. D. Parkinson.....	Millersburg.
Huron.....	J. L. Paul.....	Norwalk.....	J. W. Foster.....	Norwalk.
Jefferson.....	James T. Githcart.....	Smithfield.....	Charles McKinley.....	Smithfield.
Knox.....	J. C. Gordon.....	Mt. Vernon.....	B. S. Cassel.....	Mt. Vernon.
Lake.....	B. A. Park.....	Painesville.....	Judson & Smart.....	Painesville.
Lawrence.....	Nelson Cox.....	Proctorville.....	T. W. Rose.....	Proctorville.
Licking.....	Andrew Beard.....	Jacksontown.....	S. F. Van Voorhes.....	Newark.
Logan.....	H. Hill.....	West Liberty.....	S. E. Allman.....	Bellevue.
Lorain.....	A. H. Moores.....	Elyria.....	J. E. Willard.....	Elyria.
Lucas.....	Thos. Croft.....	East Toledo.....	Hon. J. C. Messer.....	East Toledo.
Madison.....	G. W. Wilson.....	London.....	A. J. Bell.....	London.
Mahoning.....	J. King Wilson.....	Salem.....	H. A. Manchester.....	Cantfield.
Marion.....	G. W. Walters.....	Marion.....	S. H. Kupp.....	Marion.
Medina.....	A. R. Clapp.....	Chatham Center.....	R. M. McDowell.....	Medina.
Meigs.....	B. F. Knight.....	Chester.....	L. H. Bridgeman.....	Syracuse.
Mercer.....	R. B. Miller.....	Montezuma.....	Ed. Wust.....	Montezuma.
Miami.....	W. I. Kiser.....	Piqua.....	W. H. Alexander.....	Troy.
Monroe.....	W. C. Mooney.....	Woodsfield.....	W. C. Mooney.....	Woodsfield.
Montgomery.....	Edward L. Rowe.....	Dayton.....	G. B. Harmon.....	Dayton.
Morgan.....	A. D. King.....	McConnelsville.....	J. W. Eibney.....	McConnelsville.
Morrow.....	C. D. Diea.....	Andrews.....	A. W. James.....	Mt. Gilead.
Muskingum.....	M. R. McClelland.....	Chandlersville.....	C. A. Meriam.....	Zanesville.
Noble.....	W. R. Spriggs.....	Sarahsville.....	Joel T. Davis.....	Sarahsville.
Ottawa.....	W. A. Wonnell.....	Port Clinton.....	Geo. E. St. John.....	Port Clinton.
Panling.....	Geo. W. Forder.....	Knoxdale.....	L. M. Barnes.....	Pandling.
Perry.....	Jos. Cunningham.....	New Lexington.....	T. J. Smith.....	New Lexington.
Portage.....	C. C. Gardner.....	Freedom.....	O. C. Risdon.....	Ravenna.
Preble.....	John G. Ozer.....	Campbellstown.....	C. F. Brooke, Jr.....	Eaton.

Putnam	I. H. Kahle.....	Glandorf	L. M. Ludwig.....	Ottawa.....
Richland.....	Miller Carter	Mansfield	Reid Carpenter.....	Mansfield.
Ross	Clark W. Story	Chillicothe	Theo. Septnagle.....	Chillicothe.
Sandusky	B. B. Overmeyer.....	Lindsey	W. P. Haynes	Fremont.
Scioto	W. K. Thompson	Portsmouth	E. F. Draper.....	Portsmouth.
Seneca	J. T. Robinson.....	Rockaway	W. S. Cramer.....	Tiffin.
Shelby	H. Guthrie	Sidney	J. S. Laughlin.....	Sidney.
Stark	W. H. Essig	Canton	Henry A. Mize.....	Canton.
Summit	Wm. C. Sackett.....	Akron	Robert Turner.....	Akron.
Trumbull	Jacob Perkins	Warren.....	Robert T. Izant.....	Warren.
Tuscarawas.....	Edward S. Slingluff	Canal Dover.....	Valentine Wenz	Canal Dover.
Union.....	M. Hopkins.....	Marysville	W. H. Robb	Marysville.
Van Wert.....	W. O. Brooks	Van Wert.....	O. A. Meleheimer.....	Van Wert.
Warren	Samuel Irons.....	Lebanon	I. N. Walker.....	Lebanon.
Washington	W. B. McGill.....	Veto	Henry Roesser.....	Marietta.
Wayne.....	Wm. Armstrong	Golden Corners.....	W. A. Wilson	Wooster.
Wood.....	F. A. Baldwin.....	Bowling Green.....	R. W. McMahan.....	Bowling Green.
Wyandot.....	L. W. Hull	Upper Sandusky.....	Ed. A. Gordon.....	Upper Sandusky.

TABLE I.—COUNTY FAIRS IN OHIO FOR 1891, WITH TIME AND PLACE

Counties.	Secretary.	Post-office.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison.....	West Union	Sept. 15, 16, 17 and 18	West Union.
Allen	S. D. Crites.....	Lima	Sept. 16, 17 and 18	Lima.
Ashland	A. W. Frizinger.....	Ashland.....	Sept. 1, 2, 3 and 4	Ashland.
Ashtabula	A. C. White	Jefferson	Sept. 22, 23, 24 and 25	Jefferson.
Athens	S. N. Hobson	Athens	Sept. 22, 23 and 24	Athens.
Auglaize	Jacob Hauss	Wapakoneta.....	Sept. 29, 30 and Oct. 1, 2	Wapakoneta.
Belmont	T. C. Ayers	St. Clairsville.....	Sept. 30 and Oct. 1 and 2	St. Clairsville.
Brown	W. H. Wilson	Georgetown	Oct. 6, 7, 8 and 9	Georgetown.
Butler	C. Rothenbush	Hamilton	Oct. 5, 6, 7, 8 and 9	Hamilton.
Carroll	O. A. Tope	Carrollton	Sept. 22, 23, 24 and 25	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 26, 26, 27 and 28	Urbana.
Clark	L. B. Sprague	South Charleston	Aug. 31 and Sept. 1, 2, 3 and 4	Springfield.
Clermont	John Rowan	Blowville	Aug. 31 and Sept. 1, 2, 3 and 4	Boston, Owensville P. O.
Clinton	G. P. Thorpe	Wilmington	Sept. 1, 2, 3 and 4	Wilmington.
Columbiana	Joe B. Morgan	New Lisbon	Sept. 15, 16 and 17	New Lisbon.
Coshocton	L. W. Pocock	Coshocton	Oct. 6, 7, 8 and 9	Coshocton.
Crawford	R. V. Sears	Bucyrus	Sept. 22, 23, 24 and 25	Bucyrus.
Darke	Wm. Sullivan	Greenville	Aug. 31 and Sept. 1, 2, 3 and 4	Greenville.
Delaware	W. E. Moore	Delaware	Sept. 8, 9, 10 and 11	Delaware.
Erie	Jno. T. Mack	Sandusky	Sept. 15, 16, 17 and 18	Sandusky.
Fairfield	W. T. McClensaghan	Lancaster	Oct. 13, 14, 15, 16 and 17	Lancaster.
Fayette	A. Gregg	Washington C. H.	Aug. 26, 26, 27 and 28	Washington C. H.
Fulton	Thos. Mikesell.....	Wauseon	Sept. 29 and 30, Oct. 1 and 2	Ottokee.
Gaucha	P. T. Wall	Gallipolis	Aug. 11, 12, 13 and 14	Gallipolis.
Greene	P. W. Parmelee.....	Fulton	Sept. 16, 17 and 18	Burton.
Guernsey	V. D. Craig	Xenia	Aug. 11, 12, 13 and 14	Xenia.
Hamilton	S. B. Hammel.....	Washington	Sept. 29 and 30, and Oct. 1 and 2	Washington.
Hardin	O. W. Squire	Cincinnati	Aug. 18, 19, 20, 21 and 22	Carthage.
Harrison	E. B. McNameel.....	Kenton	Sept. 1, 2, 3 and 4	Kenton.
Highland	John S. Jolly	Carliz	Sept. 1, 2, 3 and 4	Cadiz.
		Hillsboro	Aug. 4, 5, 6 and 7	Hillsboro.

Hocking	B. C. Rober.	Logan	Sept. 9, 10, 11 and 12	Logan
Holmes ..	J. G. Biderback ..	Millersburg ..	Sept. 29 and 30, and Oct. 1 and 2 ..	Millersburg ..
Huron ..	F. H. Jones	Norwalk	Sept. 8, 9, 10 and 11	Norwalk
J. Iveson ..	R. F. Henderson ..	Smithfield ..	Sept. 23, 24 and 25	Smithfield ..
Knox	S. K. Gotshall	Mt. Vernon ..	Sept. 8, 9, 10 and 11	Mt. Vernon ..
Lake	Geo. A. Bates	Painesville ..	Sept. 1, 2, 3 and 4	Painesville ..
Lawrence ..	H. O. Waters	Proctorville ..	Sept. 2, 3 and 4	Proctorville ..
Licking ..	J. F. Harlshorn ..	Newark .....	.....	Newark
Logan	Banner M. Allen ..	Bellefontaine ..	Sept. 28, 29 and 30, Oct. 1 and 2 ..	Bellefontaine ..
Lorain ..	J. E. Willard	Elyria	Sept. 29 and 30, and Oct. 1 and 2 ..	Elyria
Lucas	O. R. Bowen	Toledo	Sept. 7, 8, 9, 10 and 11	Toledo
Madison ..	F. A. Baskin	London	Sept. 8, 9, 10 and 11	London
Mahoning ..	J. H. Ruhlman ..	North Lima ..	Sept. 29 and 30, and Oct. 1	North Lima ..
Marion ..	H. M. Ault	Marion	Sept. 29 and 30, and Oct. 1 and 2 ..	Marion
Medina	Hiram Goodwin ..	Medina	Sept. 1, 2 and 3	Medina
Meigs	T. M. Cline	Pomeroy	Sept. 7, 8, 9 and 10	Pomeroy
Mercer	C. W. Halfhill ..	Montezuma ..	Aug. 25, 26, 27 and 28	Montezuma ..
Miami	W. I. Tenney	Troy	Sept. 28, 29 and 30, Oct. 1 and 2 ..	Troy
Monroe ..	Geo. P. Dorr	Woodsfield ..	Sept. 1, 2 and 3	Woodsfield ..
Montgomery ..	Geo. W. Knecht ..	Dayton	Sept. 7, 8, 9, 10 and 11	Dayton
Morrow ..	O. V. Harris	McConneleville ..	Sept. 14, 15, 16 and 17	McConneleville ..
Muskungum ..	R. P. Miller	Mt. Gilead ..	Oct. 6, 7, 8 and 9	Mt. Gilead ..
Noble	J. D. Mercer	Zanesville ..	Sept. 1, 2, 3 and 4	Zanesville ..
Ottawa ..	Joseph Johnson ..	Sarahsville ..	Sept. 16, 17 and 18	Sarahsville ..
Paulding ..	G. W. Sloan	Port Clinton ..	Sept. 23, 24 and 25	Port Clinton ..
Perry	R. S. Murphy	Paulding	Sept. 16, 17, 18 and 19	Paulding
Portage ..	H. F. Acker	New Lexington ..	Aug. 26, 27 and 28	New Lexington ..
Preble	Lafayette Smith ..	Ravenna	Sept. 21, 22, 23, 24 and 25	Ravenna
Putnam ..	W. C. Dove	Eaton	Sept. 29 and 30, Oct. 1, 2 and 3 ..	Eaton
Richland ..	F. E. Trece	Ottawa	Sept. 8, 9, 10 and 11	Ottawa
Ross	M. D. Ward	Manassah ..	Aug. 11, 12, 13 and 14	Manassah ..
Sandusky ..	H. W. Woodrow ..	Chillicothe ..	Sept. 27, 28, 29 and 30	Chillicothe ..
Scioto	Meade G. Thraves ..	Fremont	Aug. 4, 5, 6 and 7	Fremont
Seneca	Chas. W. Zell	Parismonth ..	Sept. 29 and 30, Oct. 1 and 2	Parismonth ..
Shelby	E. S. Chittenden ..	Tiffin	Sept. 22, 23, 24 and 25	Tiffin
Stark	J. G. Anderson ..	Sidney	Sept. 28, 29 and 30, Oct. 1 and 2 ..	Sidney
Summit ..	G. F. Niez	Canton	Oct. 6, 7, 8 and 9	Canton
Trumbull ..	Albert Hale	Mogadore ..	Sept. 8, 9, 10 and 11	Mogadore ..
	M. S. Clapp	Warren		Warren

TABLE I.—COUNTY FAIRS IN OHIO FOR 1891, WITH TIME AND PLACE—Concluded.

Counties.	Secretary.	Post-office.	Time of Fair.	Place of Fair.
Tuscarawas.....	John J. Jurgens	Canal Dover.....	Sept. 22, 23, 24 and 25	Canal Dover.
Union.....	E. W. Porter	Marysville	Sept. 22, 23, 24 and 25	Marysville.
Van Wert	O. D. Swartout.....	Van Wert.....	Sept. 8, 9, 10 and 11	Van Wert.
Warren	Geo. W. Carey.....	Lebanon	Aug. 25, 26, 27 and 28	Lebanon.
Washington	John H. Riley.....	Marietta	Sept. 15, 16 and 17	Marietta.
Wayne.....	I. N. Kinney	Wooster.....	Sept. 22, 23, 24 and 25	Wooster.
Wood	J. B. Newton	Bowling Green	Sept. 29 and 30, Oct. 1, 2 and 3...	Bowling Green.
Wyandot.....	O. D. Hare	Upper Sandusky	Oct. 6, 7, 8 and 9	Upper Sandusky.

TABLE II.—CATTLE—ENTRIES AND AWARDS.

Counties.	Short Horns.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams.....	21	\$73 00	\$57 00			
Allen.....	17	58 00	46 00			
Ashland.....						
Ashtabula.....	20	51 00	44 00	12	\$51 00	\$37 00
Athens.....	14	75 00	64 00	7	50 00	26 00
Auglaize.....	17	150 00	89 00			
Belmont.....	14	59 00	37 00		59 00	
Brown.....	14	51 00	47 00			
Butler.....	81	219 00	193 00			
Carroll.....	17	96 00	54 00			
Champaign.....		65 00				
Clark.....	22	194 00	165 00	15	119 00	87 00
Clermont.....						
Clinton.....	18	148 00	126 00		20 00	
Columbiana.....						
Coshocton.....	56	120 00	172 00	20	100 00	84 00
Crawford.....	18	95 00	88 00		95 00	
Cuyahoga.....						
Darke.....	26	149 00	128 80	12	149 00	99 90
Defiance.....						
Delaware.....		94 00			94 00	
Erie.....						
Fairfield.....	13	108 00	10 00			
Fayette.....						
Franklin.....						
Fulton.....	4	48 50	10 00			
Gallia.....						
Geauga.....	29	57 00	36 00	15	52 00	35 00
Greene.....	8	20 00	42 00	1	60 00	4 00
Guernsey.....	20	66 00	61 00	6	81 00	17 00
Hamilton.....	27	116 00	105 00	17	116 00	73 00
Hancock.....	9		59 00	8		26 00
Hardin.....	86	111 00	81 00		78 00	
Harrison.....	29	95 00	75 00			
Henry.....						
Highland.....	8	159 00	101 00			
Hocking.....	10	69 00	37 50			
Holmes.....	20	88 50	70 00			
Huron.....	11	51 00	32 00			
Jackson.....						
Jefferson.....	12	46 00	37 00			
Knox.....	6	42 00	19 00		42 00	
Lake.....	25	80 00	48 50	18	80 00	56 50
Lawrence.....	1	7 50	2 50			
Licking.....	29	125 00	116 00		78 00	
Logan.....	14	84 00	65 00			
Lorain.....	17	85 00	63 00			
Lucas.....	22	157 00	157 00	18	157 00	144 00
Madison.....	16	66 00	48 00			
Mahoning.....	14	84 00	60 00			
Marion.....	17	85 00	45 00			
Medina.....	27	69 00	55 00			
Meigs.....	14	108 00	75 00			
Mercer.....		84 00			84 00	
Miami.....	15	102 00	64 00	18	92 00	61 00
Monroe.....	14	46 00	41 00	1	46 00	6 00
Montgomery.....		49 00			48 00	
Morgan.....	14	36 00	21 00			
Morrow.....	12	64 00	39 00		64 00	
Muskingum.....	30	141 00	101 75	18	81 00	75 00
Noble.....	4	93 50	14 00			
Ottawa.....	17	37 50	27 00			
Paulding.....	12	60 00	24 50			
Perry.....	18	36 00	26 50	10	36 00	27 50

TABLE II.—CATTLE—Continued.

Counties.	Short Horns.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway .....	.....	.....	.....	.....	.....	.....
Pike	14	\$47 00	\$23 95	.....	.....	.....
Portage	15	117 00	84 69	13	\$101 00	\$72 00
Preble	2	94 00	14 00	19	94 00	77 00
Putnam	24	84 00	55 00	1	64 00	8 00
Richland	25	174 00	159 00	.....	.....	.....
Ross	60	90 00	90 00	60	90 00	90 00
Sandusky	18	83 00	60 00	.....	.....	.....
Scioto	21	70 00	52 00	4	60 00	21 00
Seneca	18	132 00	99 00	.....	.....	.....
Shelby	23	91 00	74 00	.....	.....	.....
Stark	26	42 00	42 00	14	49 00	49 00
Summit	17	98 00	84 00	.....	.....	.....
Trumbull	16	120 00	111 00	.....	.....	.....
Tuscarawas	37	84 00	84 00	14	84 00	82 00
Union .....	.....	.....	.....	.....	.....	.....
Van Wert .....	.....	.....	.....	.....	.....	.....
Vinton .....	.....	.....	.....	.....	.....	.....
Warren	8	40 00	24 50	14	39 00	29 00
Washington	38	100 00	72 50	.....	.....	.....
Wayne	13	82 00	45 00	.....	.....	.....
Williams	11	118 00	78 00	.....	.....	.....
Wood .....	.....	.....	.....	.....	.....	.....
Wyandot .....	.....	.....	.....	.....	.....	.....
Totals	1,258	\$6,246 50	\$3,482 40	325	\$2,566 00	\$1,276 00

TABLE II.—CATTLE—Continued.

Counties.	Polled breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams						
Allen	1		\$8 00	22	\$58 00	\$50 00
Ashland						
Ashtabula		\$51 00		7	51 00	19 00
Athens				4	50 00	15 00
Auglaize						
Belmont		59 00			59 00	
Brown		51 00			51 00	
Butler	9	104 00	70 00		103 00	
Carroll	4	86 00	8 00	1		8 00
Champaign	15	70 00	52 00			
Clark	16	119 00	86 00		119 00	
Clermont						
Clinton		20 00			20 00	
Columbiana						
Coshocton	24	120 00	98 00			
Crawford		95 00		8	95 00	11 00
Cuyahoga						
Darke	18	149 00	108 00	14	149 00	127 50
Defiance						
Delaware	18	188 00	80 00			
Erie						
Fairfield	20	108 00	108 00			
Fayette						
Franklin						
Fulton	5	87 00	17 00			
Gallia						
Geauga	7	102 00	4 00		52 00	
Greene	11	60 00	42 00		44 00	
Guernsey						
Hamilton				14	116 00	82 00
Hancock	8		44 00			
Hardin		78 00		6	78 00	81 00
Harrison	9	95 00	49 50	11	95 00	66 25
Henry						
Highland						
Hocking						
Holmes	1	51 00	6 00			
Huron		51 00			51 00	
Jackson						
Jefferson						
Knox	1	54 00	4 00	4	42 00	15 00
Lake	17	80 00	66 00	11	80 00	42 50
Lawrence						
Licking	7	78 00	22 00		51 00	
Logan	1	78 50	9 00	7	78 50	83 50
Lorain	17	85 00	68 00	83	85 00	71 00
Lucas	17	157 00	154 00	34	157 00	157 00
Madison						
Mahoning	29	84 00	70 00	11	84 00	40 00
Marion						
Medina	15	69 00	52 50	10	69 00	36 50
Meigs				2		4 00
Mercer		84 00			81 00	
Miami		92 00		15	92 00	68 00
Monroe	9	46 00	29 00		46 00	
Montgomery	1	53 00	10 00		48 00	
Morgan						
Morrow	11	124 00	50 00	2	64 00	9 00
Muskingum	18	81 00	68 25		81 00	
Noble						
Ottawa						
Paulding	1	54 00	8 00	1	58 50	8 00
Perry						

TABLE II.—CATTLE—Continued.

Counties.	Polled breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway.....						
Pike.....						
Portage.....						
Preble.....	15	\$117 00	\$84 60	22	\$117 00	\$91 80
Putnam.....	7	51 00	50 00	5	94 00	81 00
Richland.....	8	64 00	44 00	14	64 00	47 00
Ross.....						
Sandusky.....	50	90 00	85 00	60	90 00	90 00
Scioto.....						
Seneca.....						
Shelby.....						
Stark.....	7	97 00	60 00			
Summit.....	10	91 00	29 00	10	91 00	38 00
Trumbull.....	82	18 00	16 00			
Tuscarawas.....	8	41 00	41 00			
Union.....	10	108 00	71 00			
Van Wert.....	10	84 00	75 00	11	84 00	65 00
Vinton.....						
Warren.....		40 00			40 00	
Washington.....		41 50				
Wayne.....	1	64 00	6 40	4	64 00	16 80
Williams.....						
Wood.....		62 00		14	62 00	28 00
Wyandot.....	1					
Totals.....	454	\$3,981 50	\$1,895 75	352	\$3,007 00	\$1,300 25

TABLE II.—CATTLE—Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	17	\$46 00	\$38 00	10	\$56 00	\$50 00
Allen	15	58 00	33 00	20	58 00	47 00
Ashland						
Ashtabula	12	51 00	28 00	12	51 00	28 00
Athens	5	25 00	8 00		50 00	
Auglaise				12	180 00	70 00
Belmont	19	59 00	46 00	5	59 00	18 00
Brown	8	51 00	45 00	9	51 00	42 00
Butler	12	81 00	55 00	14	104 00	88 00
Carroll	6	36 00	18 00			
Champaign	14	65 00	31 00	9	59 00	37 00
Clark	18	119 00	87 00	24	119 00	103 00
Clermont						
Clinton	11	74 00	53 00		20 00	
Columbiana						
Coshocton	3	40 00	17 00			
Crawford		78 00		25	95 00	66 00
Cuyahoga						
Darke	15	149 00	108 90	26	149 00	117 00
Defiance						
Delaware	32	94 00	91 00			
Erie						
Fairfield	26	80 00	50 00	17	80 00	75 00
Fayette						
Franklin						
Fulton	5	43 50	15 00			
Gallia						
Geauga	43	102 00	58 50	18	51 00	33 50
Greene	20	80 00	57 00		44 00	
Guernsey	10	31 00	21 00		31 00	
Hamilton	21	116 00	85 00	26	116 00	107 00
Hancock	10		29 00	11		32 00
Hardin	17	78 00	40 00	16	78 00	46 00
Harrison	9	50 00	29 25	14	95 00	45 75
Henry						
Highland						
Hocking	15	69 00	55 00	6	69 00	38 00
Holmes	34	88 50	58 00	20	73 50	71 00
Huron	4	51 00	16 00	7	51 00	25 00
Jackson						
Jefferson	4	46 00	17 00		46 00	
Knox	16	42 00	34 00		42 00	
Lake	14	80 00	47 00	3	80 00	30 00
Lawrence	1	12 00	4 00			
Licking	27	78 00	78 00			
Lorain	11	68 00	42 50		78 50	
Lucas	22	85 00	69 00	10	85 00	64 50
Lorain	70	157 00	157 00	31	157 00	157 00
Madison	10	66 00	46 00	26	66 00	56 00
Mahoning	25	84 00	72 00	18	84 00	62 00
Marion	14	31 00	48 00	10	31 00	35 00
Medina	33	67 50	54 00	3	69 00	34 00
Meigs	5	36 00	21 00	9	10 00	10 00
Mercer		34 00			34 00	
Miami	28	92 00	89 00	22	92 00	92 00
Monroe	7	46 00	27 00		46 00	
Montgomery		48 00		2	48 00	9 00
Morgan						
Morrow	24	84 00	64 00			
Muskingum		81 00		26	141 00	109 50
Noble						
Ottawa	2	28 75	3 00			
Paulding	9	53 50	35 00	11	58 00	24 50
Perry	5	36 00	11 50	8	36 00	16 50

TABLE II.—CATTLE—Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike	18	\$17 00	\$9 10			
Portage	15	102 00	78 80	12	\$117 00	\$59 80
Preble	7	58 00	33 00	26	94 00	60 00
Putnam	9	64 00	45 00		64 00	
Richland	16	131 00	95 00	16	124 00	125 00
Ross	65	90 00	90 00	45	80 00	75 00
Sandusky	8	60 00	50 00	1	60 00	10 00
Scioto	19	70 00	65 00	8	60 00	14 00
Seneca						
Shelby	25	132 00	125 00	14	132 00	108 00
Stark	57	91 00	91 00	46	91 00	80 50
Summit	10	14 00	14 00	15	46 00	46 00
Trumbull	3	28 00	21 00	4	26 00	21 00
Tuscarawas	44	108 00	101 00	19	108 00	97 60
Union	11	84 00	49 00	33	34 00	30 60
Van Wert						
Vinton	18	38 00	27 00	13	38 00	22 00
Warren		40 00			40 00	
Washington	6	76 00	15 20	17	76 00	60 60
Wayne						
Williams	12	62 00	33 00	16	62 00	55 00
Wood	6	64 00	25 00	5	64 00	19 00
Wyandot						
Totals	1,097	\$4,596 25	\$3,004 75	753	\$1,439 00	\$2,890 15

TABLE II.—CATTLE—Continued.

Counties.	Ayrshires.			Any other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams				21	\$25 00	\$24 00
Allen				7	38 00	37 00
Ashland						
Ashabula	6	\$61 00	\$28 00	85	88 00	81 00
Athens				15	72 00	68 00
Angiase				3	10 00	10 00
Belmont				6	14 00	14 00
Brown				18	25 00	25 00
Butler						
Carroll	8	36 00	21 00	10	28 00	15 00
Champaign						
Clark		119 00		1	25 00	15 00
Clarion						
Clinton						
Columbiana						
Coshocton						
Crawford		78 00				
Cuyahoga				54	72 00	56 50
Darke				14	189 00	149 00
Deane						
Delaware				19	204 00	100 00
Eric						
Fairfield				13	95 00	95 00
Fayette						
Franklin	1	43 50	4 00	2	30 00	6 00
Fulton						
Gallia						
Geauga	24	51 00	11 00	85	111 00	109 00
Greene				4	120 00	80 00
Guernsey				7	50 00	16 00
Hamilton						
Hancock				24		127 00
Hardin		78 00		3	32 00	32 00
Harrison		16 00		4	40 00	40 00
Henry						
Highland						
Hocking				55	153 00	92 75
Holmes				4	18 00	9 00
Huron				17	57 00	46 00
Jackson						
Jefferson				16	104 00	77 00
Knox				9	46 00	36 00
Lake	3	80 00	14 00	23	71 00	63 00
Lawrence				3	7 50	7 50
Licking						
Legan	7	63 00	31 00	44	174 00	136 50
Lorain	20	85 00	79 00	88	100 00	89 00
Lucas	27	157 00	157 00			
Madison				8	36 00	36 00
Mahoning				11	100 00	77 00
Marion				35	152 00	147 00
Medina	15	67 50	58 00	50	100 50	86 50
Meigs						
Mercer		84 00			84 00	
Miami				6	92 00	49 00
Monroe		46 00		3	46 00	23 00
Montgomery						
Morgan	18	34 00	23 00	27	95 00	40 00
Morrow				26	56 00	36 00
Muskingum						
Noble						
Ottawa						
Paulding				10	78 50	43 50
Perry						

TABLE II.—CATTLE—Continued.

Counties.	Ayrshires.			Any other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway.....						
Pike.....						
Portage.....	18	\$47 00	\$12 25	4	\$20 00	\$6 00
Preble.....				4	15 00	18 50
Putnam.....				39	163 00	144 25
Richland.....		64 00		15	61 00	56 00
Ross.....						
Sandusky.....	50	60 00	55 00	75	125 00	120 00
Scioto.....				12	90 00	65 00
Seneca.....						
Shelby.....						
Stark.....	35	97 00	94 00	15	97 00	84 00
Summit.....	47	91 00	91 00	35	44 00	43 00
Trumbull.....					14 00	14 00
Tuscarawas.....				11	83 00	30 00
Union.....						
Van Wert.....				6	38 00	18 00
Vinton.....						
Warren.....				9	65 00	60 00
Washington.....				21	85 50	61 50
Wayne.....	14	78 00	40 80	5	15 00	8 00
Williams.....						
Wood.....	10	62 00	40 00			
Wyandot.....						
Totals.....	303	\$1,606 00	\$784 05	1,003	\$3,739 00	\$2,589 00

TABLE II.—CATTLE—Continued.

Counties.	Fat cattle and work oxen.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	18	\$18 00	\$15 00
Allen	5	8 00	8 00
Ashland			
Ashland	19	74 00	83 00
Ashland	5	40 00	18 00
Ashland			
Auglaize			
Belmont	8	40 00	18 00
Brown	14	28 00	19 00
Buier			
Carroll	7	17 00	19 00
Champaign			
Clark	1	68 00	10 00
Clermont			
Clinton			
Columbiana			
Coshocton	14	65 00	88 00
Crawford	4	84 00	24 00
Cuyahoga	18	28 00	25 00
Darke			
Defiance			
Delaware	6	62 00	14 00
Erie			
Fairfield			
Fayette			
Franklin			
Fulton			
Gallia			
Genesee	28	89 00	49 00
Greene			
Guernsey	4	24 00	11 00
Hamilton			
Hancock	4		19 00
Hardin		10 00	
Harrison	18	92 00	45 00
Henry			
Highland			
Hocking			
Holmes			
Huron	5	27 00	20 00
Jackson			
Jefferson	2	14 00	6 00
Knox	4	25 00	4 00
Lake	11	69 00	34 00
Lawrence	8	9 00	9 00
Licking	14	91 00	76 00
Logan	4	24 00	7 50
Lorain	14	64 00	50 50
Lucas			
Madison	10	36 00	35 00
Mahoning	12	52 00	34 00
Marion	11	78 00	28 00
Medina	27	75 50	59 00
Meigs	20	34 00	21 00
Mercer	2	12 50	10 00
Miami			
Monroe	4	16 00	9 00
Montgomery	4	50 00	25 00
Morgan	15	21 00	14 00
Morrow			
Muskingum	1	27 00	7 50
Noble	4	27 00	12 50
Ottawa			
Paulding	12	26 00	18 50
Perry	15	53 50	36 50

TABLE II.—CATTLE—Concluded.

Counties.	Fat cattle and work oxen.		
	Number of entries.	Amount offered.	Amount awarded.
Pickaway			
Pike			
Portage		\$91 50	\$11 70
Preble	6	28 00	21 60
Putnam	2	20 00	6 10
Richland	4	20 00	9 00
Row			
Sandusky	30	60 00	55 60
Scioto			
Seneca	2	5 00	5 00
Shelby			
Stark	17	127 00	77 00
Summit	4	80 00	9 00
Trumbull		93 60	93 10
Tuscarawas	2	12 00	12 00
Union			
Van Wert			
Vinton			
Warren			
Washington	7	34 00	11 60
Wayne			
Williams			
Wood	4	32 00	17 10
Wyandot	12	64 00	58 00
Totals	451	\$2,159 00	\$1,280 30

TABLE II.—HORSES.

Counties.	Thoroughbreds (Running horses.)			Roadster.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams				96	\$140 00	\$128 00
Allen				44	63 00	46 00
Ashland						
Ashtabula				56	115 00	88 00
Athens		\$40 00		27	75 00	60 00
Auglaize	5	17 00	\$28 00	28	81 00	87 00
Belmont	3	67 00	28 00	26	181 00	75 00
Brown				100	178 00	178 00
Butler				96	245 00	245 00
Carroll				68	121 00	116 00
Champaign	6	15 00	12 00	124	152 00	133 00
Clark	4	154 00	32 00	116	808 00	286 00
Clermont						
Clinton				82	108 00	105 00
Columbiana						
Coshocton	18	111 00	83 00	56	200 00	178 00
Crawford		18 00		68	181 00	126 00
Cuyahoga				77	63 00	78 50
Darke	4	70 00	20 70	56	198 00	175 50
Defiance						
Delaware						
Erie						
Fairfield	6	98 00	35 00	109	119 00	169 00
Fayette						
Franklin						
Fulton				43	133 50	60 50
Gallia						
Geauga				181	164 00	180 00
Greene	1	16 00	5 00	45	95 00	90 00
Guernsey				26	76 00	50 00
Hamilton				112	129 00	124 00
Hancock				36		142 00
Hardin				81	172 00	108 00
Harrison				5	16 00	16 00
Henry						
Highland	9	175 00	175 00	24	128 00	76 00
Hocking	1	108 00	10 00	39	184 00	97 50
Holmes				59	129 00	102 00
Huron				85	92 00	71 75
Jackson						
Jefferson						
Knox				24	68 00	64 00
Lake				55	84 00	48 00
Lawrence				12	48 00	48 00
Licking	9	129 00	60 00	63	274 00	264 00
Logan				108	282 00	281 50
Lorain				67	70 00	67 50
Lucas	42	3,700 00	2,384 00	48	165 00	165 00
Madison	38	841 00	801 00	56	77 00	74 00
Mahoning				69	99 00	86 00
Marion	2	20 00	20 00	62	147 00	129 00
Medina				96	106 00	77 50
Meigs						
Mercer		24 00		22	80 50	81 00
Miami				135	229 00	215 00
Monroe				26	34 00	75 00
Montgomery				46	150 00	145 00
Morgan				16	36 00	29 00
Morrow				58	96 00	88 00
Muskingum	1	86 00	6 00	54	120 00	102 00
Noble	3	50 00	19 00			
Ottawa				19	80 00	87 00
Paulding						
Perry	3	58 00	15 00	28	106 00	49 50

TABLE II.—HORSES—Continued.

Counties.	Thoroughbreds (Running horses.)			Roadster.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike						
Portage				50	\$282 00	\$118 40
Preble				70	179 00	161 10
Putnam				38	89 00	71 00
Richland	10	\$84 00	43 00	34	72 00	46 00
Ross				102	222 00	220 00
Sandusky	10	150 00	150 00	160	220 00	220 00
Scioto				18	114 00	80 00
Seneca				89	182 00	144 03
Shelby						
Stark				119	426 00	402 00
Summit	15			48	188 50	107 50
Trumbull				98	90 00	90 00
Tuscarawas				29	85 00	66 00
Union				114	90 00	90 00
Van Wert				49	97 00	71 00
Vinton						
Warren				55	114 00	114 00
Washington		58 50		48	125 50	70 00
Wayne				65	199 00	122 60
Williams						
Wood				70	128 00	119 00
Wyandot				55	186 00	150 00
Totals	183	\$5,761 50	\$ 3,678 70	4,215	\$9,179 00	\$7,828 85

TABLE II.—HORSES—Continued.

Counties.	General purposes.			Draft (English).		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	188	\$220 00	\$178 00	28	\$118 00	\$87 00
Allen	32	68 00	47 00	11	85 00	88 00
Ashland						
Ashtabula	68	115 00	89 00	10	57 50	20 00
Athens	80	75 00	57 00	18	88 00	88 00
Auglaize	43	96 00	89 00	64	116 00	116 00
Belmont	21	121 00	57 00	10	68 00	81 00
Brown	89	127 00	117 00	89	244 00	146 00
Butler	143	230 00	230 00	81	113 50	99 50
Carroll	78	121 00	98 00	43	121 00	102 00
Champaign	62	186 00	79 00	16	62 00	40 00
Clark	41	154 00	138 00	25	154 00	126 00
Clermont						
Clinton	58	149 00	142 00	12	149 00	130 00
Columbiana						
Coshoccon	62	200 00	192 00			
Crawford	40	182 00	93 00	15	66 00	42 50
Cuyahoga	55	69 00	75 50	9	51 00	31 00
Darke	80	201 00	148 50	21	166 00	136 80
Dedance						
Delaware	26	101 00	45 00	2	76 00	7 00
Erie						
Fairfield	98	169 00	158 00	111	162 00	162 00
Fayette						
Franklin						
Fulton	88	70 50	46 00	20	64 50	38 00
Gallia						
Geauga	56	77 00	56 00			
Greene	26	77 00	71 00	18	58 00	44 00
Guernsey	22	76 00	52 00	11	88 00	27 00
Hamilton	164	205 00	188 00	82	178 00	120 00
Hancock	26		109 00	66		129 00
Hardin	40	86 00	66 00	5	98 00	87 00
Harrison	50	127 00	101 00	38	75 00	69 00
Henry						
Highland	21	1 60	68 00	16	82 00	75 00
Hocking	33	148 50	92 00	8	57 00	85 00
Holmes	57	124 00	104 00	5	287 00	83 00
Huron	37	92 00	41 50	2	46 00	6 00
Jackson						
Jefferson	40	72 00	72 00	28	62 00	44 00
Knox						
Lake	19	60 00	85 00	6	48 00	14 00
Lawrence	9	27 00	24 00			
Licking	89	206 00	174 00	13	105 50	81 00
Logan	61	174 00	186 50	14	127 50	52 00
Lorain	51	70 00	68 00	18	85 00	26 00
Lucas	16	162 00	162 00	21	182 00	144 00
Madison	37	84 00	74 00	5	78 00	26 00
Mahoning	49	94 00	64 00	9	45 00	24 00
Marion	35	129 00	87 00	4	114 00	12 00
Medina	58	100 50	69 50	23	100 50	89 50
Meigs	39	130 00	119 00	30	130 00	97 00
Mercer	26	80 50	57 50	18	110 00	81 00
Miami	82	203 00	174 00	41	191 00	164 00
Monroe	31	68 00	49 00			
Montgomery	58	138 00	130 00	30	151 00	130 00
Morgan	54	58 00	31 00	14	30 00	11 50
Morrow	43	98 00	76 00	3	88 00	19 00
Muskingum	37	120 00	92 00	10	60 00	46 85
Noble	18	121 00	89 00	11	87 50	26 50
Ottawa	19	74 00	89 00			
Paulding	9	78 00	25 50	14	94 00	51 50
Perry	38	108 00	59 50	11	54 00	22 25

TABLE II.—HORSES—Continued.

Counties.	General purposes.			Draft (English).		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike						
Portage	85	\$141 00	\$79 70	8	\$71 00	\$23 40
Preble	69	179 00	161 10	17	116 00	13 70
Putnam	37	72 00	58 00	7	118 00	31 00
Richland	11	72 00	32 00	4	84 00	24 00
Ross	83	113 00	83 00	43	224 00	169 00
Sandusky	200	250 00	250 00	180	220 00	220 00
Scioto	14	70 00	50 00	8	80 00	45 00
Seneca	50	198 00	78 00			
Shelby						
Stark	54	190 00	163 00	7	150 00	51 00
Summit	74	189 00	112 00	25	90 00	71 25
Trumbull	52	59 00	59 00	22	25 00	26 00
Tuscarawas	43	95 00	85 00	41	172 00	99 00
Union	33	91 00	72 00	18	150 00	70 00
Van Wert	49	97 00	74 00	32	147 50	79 00
Vinton						
Warren	67	155 00	148 00	29	135 00	97 00
Washington	28	61 00	45 00	14	61 00	34 00
Wayne	28	109 00	64 00	85	221 00	111 20
Williams						
Wood	61	105 00	88 00	26	98 00	81 00
Wyandot	31	186 00	120 00	20	186 00	78 00
Totals	3,501	\$3,487 00	\$3,685 80	1,558	\$7,000 00	\$4,473 45

TABLE II.—HORSES—Continued.

Counties.	Draft (French.)			Speed horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	5	\$71 00	\$17 00			
Allen	18	85 00	57 00	38	\$1,566 00	\$942 00
Ashland						
Ashtabula	10	57 50	20 00	38	1,390 00	1,284 00
Athens	12	37 00	82 00	34	1,450 00	1,450 00
Anglaise				26	870 00	970 00
Belmont	9	63 00	30 00	32	700 00	553 33
Brown						
Butler	31	118 50	99 50	58	3,850 00	3,180 00
Carroll					1,055 00	925 00
Champaign	78	147 00	93 00	00	1,475 00	1,445 00
Clark	5	151 00	40 00	55	2,190 00	1,988 00
Clermont						
Clinton	9	90 00	90 00	33	1,325 00	1,325 00
Columbiana						
Coshocton	33	200 00	151 00	64	1,510 00	1,470 00
Crawford	15	66 00	42 50	36	965 00	760 00
Cuyahoga	9	71 00	47 00			
Darke	32	162 00	103 50	56	2,083 00	1,803 75
Defiance						
Delaware	8	76 00	28 00	21	900 00	855 00
Erie						
Fairfield				107	2,300 00	2,000 00
Fayette						
Franklin						
Fulton	20	64 50	33 00	7	50 00	30 00
Gallia						
Geauga	36	33 00	45 10	43	1,075 00	1,035 00
Greene	12	53 00	44 00	63	1,210 00	1,137 00
Guernsey	10	78 00	26 00	24	1,25 00	115 00
Hamilton		104 00		32	4,500 00	4,450 00
Hancock	33		193 00	49		2,750 00
Hardin	11	98 00	47 00	31	1,500 00	1,125 00
Harrison	33	75 00	69 00	49	1,580 00	1,080 00
Henry						
Highland	15	31 00	75 00	42	910 00	770 00
Rocking	7	57 00	35 00	40	1,770 00	1,401 00
Holmes	4	73 00	19 00	57	995 00	1,118 00
Huron	2	46 00	6 00	49	1,300 00	1,098 75
Jackson						
Jefferson	24	50 00	42 00	29	400 00	380 00
Knox	12	68 00	35 00		1,720 00	1,525 50
Lake	5	48 00	14 00		1,275 00	1,142 50
Lawrence	6	17 00	16 00	14	270 00	218 00
Licking	13	105 50	51 00	30	1,930 00	1,900 00
Logan	21	127 50	95 00	48	1,295 00	1,295 00
Lorain	12	35 00	25 00			
Lucas	5	162 00	135 00	25	315 00	315 00
Madison	3	77 00	8 00	35	1,870 00	1,290 00
Mahoning	3	44 00	18 00	70	800 00	750 00
Marion	7	110 00	45 00	59	2,100 00	2,100 00
Medina	12	45 00	25 50	21	900 00	552 50
Meigs				28	1,175 00	810 00
Mercer	23	69 50	65 50	31	1,240 00	1,110 00
Miami	49	171 00	143 00	66	1,460 00	1,255 00
Monroe				30	400 00	385 00
Montgomery	43	153 00	148 00	71	3,375 00	2,112 50
Morgan	13	30 00	11 50	19	611 00	475 00
Morrow	17	38 00	55 00	23	850 00	700 00
Muskingum	13	60 00	48 33	45	1,850 00	855 00
Noble				12	20 00	20 00
Ottawa	17	76 00	36 00	9	450 00	22 00
Paulding	13	52 50	20 00	20	724 00	724 00
Perry	11	64 00	22 25	16	750 00	635 00

TABLE II.—HORSES—Continued.

Counties.	Draft (French.)			Speed horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike	7	\$70 00	\$23 00	54	\$1,225 00	\$1,202 50
Portage	18	116 00	83 70	53	970 00	567 00
Preble	6	115 00	18 00	37	1,089 00	1,089 00
Putnam	7	84 00	29 00	24	1,575 00	1,150 00
Richland				31	8,925 00	8,845 00
Ross	180	200 00	200 00	30	1,000 00	1,000 00
Sandusky	7	80 00	45 00			
Scioto					1,850 00	585 00
Seneca						
Shelby	31	150 00	132 00	26	1,300 00	1,005 00
Stark	24	90 00	71 25	53	1,915 00	1,679 00
Summit	21	25 00	25 00	119	1,324 75	1,328 75
Trumbull				22	768 00	715 00
Tuscarawas	34	150 00	181 00	45	1,015 00	985 00
Union	30	147 50	96 00	60	890 00	606 00
Van Wert						
Vinton				50	875 00	825 00
Warren						
Washington	15	81 00	44 50	43	1,300 00	899 50
Wayne						
Williams	15	96 00	82 00	32	1,900 00	1,750 00
Wood	21	106 00	78 00	24	775 00	575 00
Wyandot						
Totals	1,147	\$5,208 00	\$3,559 95	2,649	\$37,910 75	\$78,007 58

TABLE II.—HORSES—Continued.

Counties.	Horses, all other classes.			Mules and asses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	66	\$120 00	\$ 09 00	5	\$11 00	\$22 00
Allen	60	283 00	181 00	1		5 00
Ashland						
Ashtabula	18	65 00	38 00			
Athens	2	148 00	180 00	2	27 00	15 00
Auglaize	10	82 00	29 00			
Belmont	7			2	20 00	5 00
Brown	78	122 00	122 00	10	87 00	21 00
Butler						
Carroll	68	153 00	131 00	2		2 00
Champaign						
Clark	54	329 00	205 00	2	63 00	2 00
Clermont						
Clinton	31	260 00	222 00			
Columbiana						
Coshocton	5	47 00	21 00	4	27 00	14 00
Crawford	16	89 00	27 00	1	30 00	3 00
Cuyahoga	31	243 00	228 00	1	10 00	9 00
Darke						
DeKalb						
Delaware	126	828 00	258 00			
Erie						
Fairfield	103	229 00	220 00	8	41 00	20 00
Fayette						
Franklin						
Fulton	7	60 00	29 00			
Gallia						
Geauga	23	48 00	24 00			
Greene	19	148 00	90 00	2	16 00	13 00
Guernsey	19	48 00	32 00		6 00	
Hamilton	61	308 00	291 00	10	23 00	23 00
Hancock	63		377 00	2		7 00
Hardin	65	112 00	99 00		26 00	
Harrison	57	208 00	165 00			
Henry						
Higbland	12					
Hocking	18	82 50	40 00	1	45 00	2 50
Holmes	40	255 00	139 50	6	24 00	16 50
Huron	10	63 00	31 00			
Jackson						
Jefferson	68	126 00	96 00			
Knox	33	205 00	118 00			
Lake	26	123 50	71 00			
Lawrence	6	9 00	9 00			
Licking	24	13 00	13 00	1	12 00	3 00
Logan	59	286 50	154 00			
Lorain	18	49 50	45 50			
Lucas	49	672 00	636 00			
Madison	86	244 00	216 00	4	19 00	11 00
Mahoning	8	109 00	82 00			
Marion	135	895 00	195 00	3	31 00	12 00
Medina	36	82 50	69 50	2	10 00	4 00
Meigs	11	60 00	31 00	1	8 00	5 00
Mercer	5	22 50	17 50	6	15 00	9 00
Miami	14	191 00	108 00		53 00	
Monroe						
Montgomery	14	39 00	39 00			
Morgan	87	164 00	60 00	6	24 00	5 00
Norow	109	228 00	190 00	1	19 00	3 00
Muskingum	16	95 00	78 75			
Noble	16	140 00	60 00			
Ottawa						
Paulding	9	58 50	38 00		15 00	
Perry	13	50 00	42 00			

TABLE II.—HORSES—Concluded.

Counties.	Horses, all other classes.			Mules and asses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike						
Portage						
Preble	71	\$176 00	\$184 10	4	\$14 00	\$15 30
Putnam	67	865 00	228 85	2	26 00	9 00
Richland	45	248 00	122 00			
Ross						
Sandusky	55	100 00	100 00			
Scioto	22	250 00	200 00			
Seneca						
Shelby						
Stark	25	87 00	155 00	4	15 00	15 00
Summit	49	171 00	189 00			
Trumbull		73 00	73 00			
Tuscarawas	20	93 00	81 00			
Union	104	107 00	81 00			
Van Wert	50	165 00	80 00			
Vinton						
Warren	26	110 00	50 00	1	8 00	5 00
Washington	2	16 00	8 00	2	28 25	7 00
Wayne	8	11 00	8 90			
Williams						
Wood	29	165 00	72 00	3	25 50	8 00
Wyandot						
Totals	2,490	\$9,187 50	\$7,022 60	99	\$800 75	\$296 30

TABLE II.—SHEEP.

Counties.	Fine wools.			Coarse and long wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	27	\$60 00	\$17 00	19	\$60 00	\$39 00
Allen	81	58 00	71 00	29	50 00	47 00
Ashland						
Ashtabula	12	26 00	26 00	64	143 00	85 00
Athens	40	120 00	98 00	18	75 00	40 00
Auglaize	53	89 00	89 00	10	85 00	22 50
Belmont	19	116 00	56 00	2	76 00	8 00
Brown	93	146 00	141 00	6	24 00	24 00
Butler	12	41 00	39 00	37	128 00	118 00
Carroll	62	159 00	154 00	61	185 00	137 00
Champaign	56	58 00	33 00	55	66 00	58 00
Clark	55	15 00	134 00	56	260 00	146 00
Clermont						
Clinton	9	31 00	31 00	5	31 00	29 00
Columbiana						
Coshocton	46	156 00	118 00	88	186 00	136 00
Crawford	22	38 00	38 00	56	38 00	131 00
Cuyahoga	12	17 00	14 25	16	48 00	34 00
Darke	83	68 00	56 70	97	229 00	218 10
Defiance						
Delaware	27	118 00	88 00	60	270 00	178 00
Erie						
Fairfield	53	320 00	315 00	71	335 00	320 00
Fayette						
Franklin						
Fulton	60	60 50	60 50	44	55 50	54 50
Gallia						
Geauga	24	81 00	80 00	116	194 00	122 00
Greene	20	68 00	60 00	22	68 00	66 00
Guernsey	22	102 00	67 00	19	41 00	34 00
Hamilton	16	37 00	32 00	59	119 00	104 00
Hancock	85		42 00	102		196 00
Hardin	47	69 00	56 00	62	109 00	75 00
Harrison	44	263 00	125 00	39	68 00	69 00
Henry						
Highland	11	28 00	18 00	9	34 00	25 00
Hocking	2	64 50	6 00	12	64 50	32 50
Holmes	16	58 50	61 50	27	94 50	58 50
Huron	37	61 00	59 00	16	71 00	15 00
Jackson						
Jefferson	40	203 00	134 00	9	16 00	16 00
Knox	30	76 00	66 00	26	97 00	67 00
Lake	12	39 00	25 00	47	164 00	101 00
Lawrence						
Licking	47	259 00	237 00	78	199 00	196 00
Logan	57	47 50	47 50	75	104 00	89 00
Lorain	44	52 00	50 50	51	90 00	88 50
Lucas	50	118 00	118 00	105	279 00	279 00
Madison	11	80 00	29 00	16	61 00	33 00
Mahoning	36	72 00	62 00	60	189 00	72 00
Marion	36	182 00	123 00	86	192 00	156 00
Medina	81	57 00	39 00	60	129 50	112 50
Meigs	10	64 00	47 00	11	64 00	41 00
Mercer		34 00		14	34 00	31 00
Miami	56	59 00	44 00	90	177 00	159 00
Monroe	20	111 00	68 00	4	70 00	14 00
Montgomery	12	37 00	37 00	40	181 00	131 00
Morgan	54	62 00	49 00		38 00	
Morrow	61	47 00	47 00	28	83 00	54 00
Muskingum	75	137 00	132 75	48	94 00	94 00
Noble				4	48 00	7 50
Ottawa	9	27 50	19 50	3	49 50	8 00
Paulding	18	61 00	28 00	16	50 75	20 00
Perry	31	72 00	52 50	4	32 00	12 50

TABLE II.—SHEEP—Concluded.

Counties.	Fine wools.			Coarse and long wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike						
Portage	29	\$72 00	\$72 00	50	\$116 00	55 90
Preble	72	113 00	99 90	52	90 00	71 10
Putnam	16	81 00	29 00	52	96 00	75 00
Richland	39	105 00	104 00	59	116 00	115 00
Ross	16	75 00	38 00		81 00	
Sandusky	150	200 00	200 00	180	150 00	150 00
Scioto						
Seneca	15	44 00	41 00	20	43 00	43 00
Shelby						
Stark	46	171 00	171 00	67	262 00	256 00
Summit	48	88 50	86 00	76	196 50	168 50
Trumbull	15	27 00	27 00	44	70 00	70 00
Tuscarawas	14	116 00	59 00	23	144 00	82 00
Union	74	69 00	69 00	65	145 00	142 00
Van Wert	27	38 00	38 00	81	288 00	148 00
Vinton						
Warren	17	108 00	49 00		24 00	
Washington	6	52 00	11 00	12	75 00	81 00
Wayne				40	86 00	64 00
Williams						
Wood	11	40 00	29 00	49	103 00	77 00
Wyandot	17	76 00	68 00	20	76 00	76 00
Totals	2,850	\$5,908 00	\$4,786 60	2,927	\$7,531 75	\$6,023 60

TABLE II.—Hogs.

Counties.	Poland Chinas.			Berkshires.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	5	\$35 00	\$13 00		\$35 00	
Allen	14	57 00	45 00	15	57 00	\$46 00
Ashland						
Ashsbulu	9	32 00	30 00	11	32 00	29 00
Athens	4	12 00	12 00	4	12 00	12 00
Auglaise	15	70 00	49 00	16	70 00	56 00
Bolmont		22 00			22 00	
Brown	19	46 00	35 00	11	46 00	46 00
Butler	58	89 00	89 00	21	89 00	84 00
Carroll	10	58 00	34 00	24	56 00	56 00
Champaign	29	88 00	28 00	12	88 00	82 00
Clark	56	84 00	77 00	12	84 00	56 00
Clermont						
Clinton				19	78 00	68 00
Columbiana						
Coshocton	18	83 00	50 00			
Crawford	25	50 00	50 00		50 00	
Cuyahoga						
Darke	69	102 00	91 80	33	102 00	91 80
Defiance						
Delaware	17	69 00	64 00	19	69 00	61 00
Erie						
Fairfield	41	290 00	285 00	29	200 00	200 00
Fayette						
Franklin						
Fulton	80	28 50	27 50		28 50	
Gallia						
Genaga	19	24 00	13 00	24	24 00	24 00
Greene	12	40 00	36 00	18	40 00	38 00
Guernsey	9	30 00	22 00			
Hamilton	16	108 00	88 00	8	108 00	62 00
Hancock	14		46 00	5		25 00
Hardin	16	65 00	38 00	8	65 00	30 00
Harrison						
Henry						
Highland	7	44 00	44 00		44 00	44 00
Hocking	9	45 00	30 00		45 00	
Holmes	31	70 00	65 50	1	46 50	5 00
Huron	5	36 00	19 00		36 50	
Jack-on						
Jefferson	6	15 00	15 00	6	15 00	15 00
Knox	10	52 00	28 00		52 00	
Lake	6	47 00	17 00	9	47 00	21 00
Lawrence	2	6 00	6 00			
Licking	24	111 00	96 00	13	111 00	78 00
Logan	41	81 00	77 50	2	81 00	7 00
Loraln	12	83 00	27 00			
Lucas	12	70 00	70 00	14	70 00	70 00
Madison	19	56 00	50 00	8	56 00	34 00
Mahoning	13	84 00	28 00	23	34 00	34 00
Marion	10	51 00	28 00			
Medina	11	39 50	26 00	7	39 50	20 00
Meigs	6	24 00	24 00			
Mercer		38 50		8	38 50	29 00
Miami	25	73 00	71 00	24	73 00	67 00
Monroe		35 00			35 00	
Montgomery	15	55 00	55 00	11	55 00	49 00
Morgan						
Morrow	22	41 00	38 00	8	41 00	25 00
Muskingum	13	50 00	38 00	2	50 00	9 75
Noble				6	22 50	13 50
Ottawa						
Paulding	10	24 50	14 00		25 50	
Perry	8	29 75	14 25	7	29 75	16 25

TABLE II.—Hogs—Continued.

Counties.	Poland Chinas.			Berkshires.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway.....						
Pike.....	7	\$38 00	\$14 00	3	\$38 00	\$5 00
Portage.....	27	87 00	71 10	32	87 00	78 30
Preble.....	6	84 00	16 00	8	84 00	23 00
Putnam.....	12	53 00	32 00	7	58 00	25 00
Richland.....	25	98 00	65 00	4	72 00	32 00
Ross.....	60	100 00	100 00	90	150 00	150 00
Sandusky.....	9	45 00	40 00			
Scioto.....	8	44 00	17 00	8	44 00	15 00
Seneca.....						
Shelby.....	40	102 00	102 00	23	75 00	69 00
Stark.....	29	71 00	61 50	47	71 00	71 00
Summit.....				21	28 00	28 00
Trumbull.....	15	61 00	59 00	16	61 00	56 00
Tuscarawas.....	45	64 00	64 00			
Union.....	53	66 00	60 00	32	66 00	63 00
Van Wert.....						
Vinton.....	12	66 00	40 00		44 00	
Warren.....	7	26 00	18 00		26 00	
Washington.....						
Wayne.....						
Williams.....	24	56 00	46 00	6	56 00	26 00
Wood.....	19	58 00	41 00	8	53 00	27 00
Wyandot.....						
Totals.....	1,228	\$3,654 75	\$2,954 15	783	\$3,296 25	\$2,223 00

TABLE II.—Hogs—Continued.

Counties.	Chester Whites.			All other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	1	\$35 00	\$4 00	3	\$10 00	\$3 00
Allen	11	57 00	29 00	28	84 00	50 00
Ashland						
Ashland	7	32 00	24 00		64 00	
Athens	4	12 00	12 00	10	25 00	28 00
Auglaize	12	75 00	33 00			
Belmont		22 00			64 00	
Brown		46 00		8	145 00	15 00
Butler	17	89 00	65 00	37	174 00	124 00
Carroll	15	56 00	49 00	17	31 00	24 00
Champaign	11	33 00	30 00	10	56 00	22 00
Clark	9	84 00	45 00	1	89 00	5 00
Clermont						
Clinton				6	102 00	29 00
Columbiana						
Coshocton	9	61 00	39 00			
Crawford	36	50 00	55 00	6	50 00	18 00
Cuyahoga	8	22 50	14 00	5	16 00	8 00
Darke				77	314 00	292 60
Deane						
Delaware	34	69 00	62 00	11	38 00	38 00
Erie						
Fairfield	18	175 00	178 00			
Fayette						
Franklin		28 50			28 50	
Gallia						
Geauga	13	24 00	20 00	27	72 00	17 00
Greene	1	40 00	2 00	12	20 00	20 00
Guernsey		28 00				
Hamilton				27	108 00	34 00
Hancock	18		46 00	17		38 00
Hardin	14	65 00	39 00	11	195 00	36 00
Harrison				4	39 00	21 00
Henry						
Highland						
Hocking	4	45 00	18 00	8	79 50	20 00
Holmes		46 50		6	97 50	22 50
Huron	10	36 50	27 50	8	45 50	24 00
Jackson						
Jefferson		15 00		9	30 00	26 00
Knox	7	52 00	27 00	5	12 00	12 00
Lake	3	47 00	9 00		188 00	
Lake	1	5 00	1 50			
Licking	40	111 00	106 00	15	161 00	111 00
Logan	22	81 00	69 00	7	18 00	18 00
Lorain	20	33 00	34 00	9	120 00	21 00
Lucas	12	70 00	70 00	48	203 00	202 00
Madison	6	56 00	22 00			
Manitou	27	68 00	60 00	7	20 00	20 00
Marion	5	51 00	19 00	11	28 00	28 00
Medina	17	44 00	41 50	31	59 50	33 00
Melara	6	24 00	24 00	5	24 00	21 00
Mercer		38 50			79 00	
Miami	22	78 00	68 00	35	186 00	86 00
Monroe		35 00		1	25 00	4 00
Montgomery	7	55 00	33 00	3	24 00	24 00
Morgan				41	54 00	32 00
Morrow	11	41 00	33 00	9	41 00	26 00
Muskingum	16	50 00	50 00	5	36 00	26 00
Noble						
Ottawa				9	50 00	21 00
Paulding	3	25 00	8 00	4	39 00	
Perry	3	23 75	7 00	3	15 00	15 00

TABLE II.—Hogs—Concluded.

Counties.	Chester Whites.			All other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike	7	\$38 00	\$8 00			
Portage	24	87 00	71 10	36	\$87 00	\$78 30
Preble	8	24 00	20 00	18	48 00	32 00
Putnam	80	58 00	58 00	17	80 00	35 00
Richland						
Ross						
Sandusky	75	120 00	110 00	25	50 00	50 00
Scioto				8	20 00	15 00
Seneca						
Shelby						
Stark	16	75 00	65 00	4	75 00	27 00
Summit	41	71 00	68 00	17	51 00	44 50
Trumbull	12				27 00	27 00
Tuscarawas	18	61 00	61 00	8	61 00	80 00
Union		64 00				
Van Wert	9	66 00	43 00	62	165 00	144 00
Vinton						
Warren	1	48 00	8 00	28	68 00	67 00
Washington	7	26 00	16 00	5	48 00	18 00
Wayne				7	50 00	24 00
Williams						
Wood		56 00		21	85 00	60 00
Wyandot		58 00				
Totals	742	\$3,097 25	\$1,970 00	848	\$4,225 00	\$2,871 98

TABLE II.—POULTRY AND MECHANIC ARTS.

Counties.	Poultry.			Mechanic arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	54	\$71 50	\$31 00	72	\$52 00	\$28 00
Allen	176	108 00	57 00	1,134	44 00	31 00
Ashtabula	98	77 00	20 00	47		
Athens	25	65 00	20 00	66	125 00	35 00
Auglaize	62	51 50	38 50	47	71 00	61 00
Belmont	6	122 50	2 00	67	172 00	49 75
Brown	98	90 00	51 00	46	128 00	88 00
Butler	256	161 00	138 00			
Carroll	103	64 00	46 50	76	181 00	60 00
Champaign	96	128 00	40 00	13	86 00	30 00
Clark	208	85 00	209 00	153	21 00	21 00
Clermont						
Clinton	42	32 00	27 00	29	118 00	82 00
Columbiana						
Coshocton	220	150 00	110 00	186	350 00	114 00
Crawford	184	88 75	66 75	29	187 50	91 50
Cuyahoga	68	16 25	15 00	62	66 75	44 50
Darke	139	117 70	77 59	184	575 00	429 65
Defiance						
Delaware	59	50 00	31 50	40	135 00	52 00
Erie						
Fairfield	231	170 75	170 75	305		
Fayette						
Franklin						
Fulton	87	40 20	14 90	34	51 50	14 50
Gallia						
Geauga	376	151 00	141 00	39	89 75	82 75
Greene	36	104 00	29 00			
Guernsey	75	42 00	27 00	150	50 00	40 00
Hamilton	105	72 00	50 00	5	30 00	30 00
Hancock	142		99 00			
Hardin	68	82 00	34 00	50	170 00	98 00
Harrison	41	82 00	34 00	54	165 00	100 00
Henry						
Highland	39	54 00	51 00			
Hocking	64	92 25	54 00	47	133 25	56 75
Holmes	89	61 85	34 75	55	87 25	68 50
Huron	117	99 00	49 00	52	30 00	39 00
Jackson						
Jefferson	102	30 00	21 60	60	104 00	58 40
Knox	82	48 50	18 75	64	209 00	140 00
Lake	183		77 50	43	48 00	41 00
Lawrence	2	85	50			
Licking	278	325 00	193 00	143	233 00	268 00
Lozan	56	42 00	16 10	68	54 50	30 50
Lorain	220	112 00	108 00	162	175 50	164 50
Lucas	237	327 00	327 00	56		
Madison	117	189 50	53 00			
Mahoning	235	98 00	98 00	54	160 25	78 60
Marion	262		167 00	160	351 00	262 00
Medina	407		170 00	77	36 00	24 00
Meigs	18	81 00	16 00	45	147 75	92 50
Mercer	25	152 00	19 00	22	98 75	23 50
Miami	72	110 00	68 00			
Monroe	12	40 00	12 00	19		
Montgomery	93	175 00	104 75		55 00	25 25
Morgan	58	64 00	21 00	46	67 00	16 00
Morrow	94	225 60	61 00	15	75 00	18 00
Muskingum	75	130 50	44 00	34	206 00	62 00
Noble				17	126 00	27 00
Ottawa	15	26 25	11 00	22	111 50	27 75
Paulding	90	78 25	31 75	43	113 00	58 00
Perry	66	33 75	30 50	8	36 00	7 00

TABLE II.—POULTRY AND MECHANIC ARTS—Concluded.

Counties.	Poultry.			Mechanic arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway						
Pike						
Portage	439		\$167 00	52	\$81 50	\$41 50
Preble	143	\$102 75	66 25	67	101 00	66 25
Putnam	95	114 00	70 00	62	190 00	120 00
Richland	191	155 00	94 50	48	78 00	25 00
Ross	173	95 00	72 00	39	138 00	91 00
Sandusky	608	180 00	180 00	450	840 00	825 00
Scioto	263	210 00	210 00	7	65 00	40 00
Seneca	41	46 00	19 00			
Shelby						
Stark	224	218 00	135 00	600	200 00	73 00
Summit	474	189 25	114 19	120		
Trumbull	128	88 25	88 25	72	94 00	94 00
Tuscarawas	69	72 00	24 00	64	111 00	56 00
Union	428	201 50	170 00	141	171 00	135 00
Van Wert	223	146 00	146 00	54	61 00	61 00
Vinton						
Warren	87	270 00	79 75	65	177 00	74 00
Washington	16	54 25	6 80	24	142 25	22 50
Wayne	94	100 00	41 20	118	80 00	17 00
Williams						
Wood	126	97 50	65 80	87		
Wyandot	88		64 00			
Totals	9,892	\$7,299 85	\$5,233 23	6,148	\$7,680 00	\$4,877 55

TABLE II.—HORTICULTURE AND FLORICULTURE.

Counties.	Farm products.			Fruits.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	202	\$97 00	\$69 50	53	\$15 00	\$9 75
Allen	256	49 00	43 00	39	16 00	15 00
Ashland						
Ashland	415	185 00	188 00	470	148 00	87 00
Ashland	180	175 00	80 00	140	75 00	83 00
Ashland	425	87 50	81 00	47	14 00	14 00
Ashland	50	39 00	11 00	84	17 75	8 63
Brown	643	103 00	90 00	277	48 00	25 00
Butler	647	247 00	243 00	825	75 00	75 00
Carroll	518	89 50	65 25	102	84 50	26 60
Champaign	418	151 00	108 00	812	44 00	38 50
Clark	491	410 00	332 00	206	176 00	99 00
Clermont						
Clermont	50	38 50	38 50	70	38 00	37 00
Columbiana						
Coshocton	821	324 00	200 00	45	118 00	23 00
Crawford	801	150 70	102 65	20	73 95	6 90
Cuyahoga	143	18 75	24 60	105	14 75	10 50
Darke	805	194 60	176 15	74	85 50	80 60
Defiance						
Delaware	373	167 75	106 50	103	64 25	24 00
Erle						
Fairfield	211	80 00	75 60	101	90 00	55 00
Fayette						
Franklin						
Fulton	813	56 65	37 60	211	34 65	28 65
Gallia						
Geauga	492	178 50	103 00	375	35 00	34 00
Greene	240	112 00	77 25	71	40 00	22 00
Guernsey	350	215 00	107 50	125	60 00	24 50
Hamilton	340	145 00	130 60	123	92 00	78 00
Hancock						
Hardin	340	87 00	68 00	70	21 00	16 00
Harrison	86	85 00	43 00	58	48 00	18 00
Henry						
Hilliard	50	54 00	54 00	34	56 00	35 00
Hocking	121	98 25	41 75	73	30 25	19 50
Holmes	491	78 90	78 90	264	69 40	62 95
Huron	89	64 50	59 00	90	79 50	53 50
Jackson						
Jefferson	156	60 00	51 80	75	30 00	13 80
Knox	128	78 50	41 00	55	23 00	14 00
Lake	241	57 75	48 50	306	56 00	56 00
Lawrence	225	75 00	68 00			
Licking	479	150 00	125 00	189	103 00	79 00
Logan	563	123 50	159 75	61	25 50	52 50
Lorain	852	125 00	125 00	270	110 00	106 00
Lucas	302	612 00	596 00	495	261 00	261 00
Madison	97	120 25	76 00	47	29 00	16 00
Mahoning	350	203 00	115 50	338	38 25	38 25
Marion	556	101 00	197 00	197	80 00	80 00
Medina	285	66 60	61 45	83	10 00	9 55
Meigs	184	69 50	89 00	11	8 00	7 00
Mercer	126	154 00	71 25	81	70 00	31 25
Miami	218	142 00	129 00	388	96 00	81 00
Monroe	112	25 00	19 25	105	25 00	15 50
Montgomery	110	102 00	81 00	116	136 50	121 00
Morgan	187	75 00	42 50	83	24 00	19 50
Morrow	328	60 00	42 00	282	63 00	56 00
Muskingum	156	98 50	62 25	359	225 00	141 75
Noble	15	44 50	9 00	5	18 00	7 00
Ottawa	156	54 00	55 75	125	68 00	40 00
Paulding	90	98 00	46 00	163	60 00	21 80
Perry	285	80 55	59 45	82	36 00	24 00

TABLE II.—HORTICULTURE AND FLORICULTURE—Continued.

Counties.	Farm products.			Fruits.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway.....						
Pike.....						
Portage.....	430	\$137 75	\$92 25	173	\$62 25	\$33 75
Preble.....	884	148 25	125 56	96	21 25	22 50
Putnam.....	1,231	160 00	152 00	202	40 00	22 00
Richland.....	192	87 00	63 50	223	58 00	59 50
Ross.....	239	133 00	112 00	337	141 00	106 00
Sandusky.....	350	175 00	170 00	500	170 00	170 00
Scioto.....	106	158 00	145 00	50	120 00	75 00
Seneca.....	362	114 00	94 50	59	60 00	18 00
Shelby.....						
Stark.....	631	455 00	278 00	622	220 00	127 00
Summit.....	1,255	290 50	424 50	392	127 00	104 82
Trumbull.....	408	94 85	94 85	300	52 30	52 30
Tuscarawas.....	339	198 25	139 50	267	50 50	22 00
Union.....	251	170 50	80 00	30	19 50	19 50
Van Wert.....	907	238 00	238 00	684	54 00	54 00
Vinton.....						
Warren.....	295	79 00	69 50	215	60 00	59 50
Washington.....	102	199 50	32 55	55	28 80	15 50
Wayne.....	153	131 50	76 70	89	46 00	23 00
Williams.....						
Wood.....	912	251 00	228 50	243	87 00	71 25
Wyandot.....	518	375 00	340 00	40	35 00	24 00
Totals.....	23,777	\$10,103 85	\$8,083 75	12,472	\$1,596 25	\$3,487 25

REPORTS FROM COUNTY SOCIETIES.

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TABLE II.—HORTICULTURE AND FLORICULTURE—Continued.

Counties.	Flowers.			Pickles, canned fruit, jellies, etc.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	13	\$19 00	\$14 00	419	\$40 00	\$40 00
Allen	14	12 00	7 00	475	41 00	45 00
Ashland						
Ashtabula	138	92 00	70 00	386	70 00	67 00
Athens	45	20 00	12 00	30	22 00	16 00
Auglaize	28	19 00	18 25	840	84 00	84 00
Baldont		20 00	20 00	91	15 00	8 00
Brown		91 00	90 00	864	85 00	84 00
Butler	372	202 00	248 00	861	46 00	58 00
Carroll	42	24 25	20 50	88	28 50	21 50
Champaign	16	40 00	15 00	869	69 75	62 25
Clark	148	148 00	135 00	691	189 00	178 00
Clermont						
Clinton	12	54 00	28 00	258	60 00	60 00
Columbiana						
Coshocton	255	55 00	45 00	229	60 00	54 00
Crawford	34	80 00	29 50	101	30 75	26 00
Cuyahoga	52		29 25	61	16 25	16 00
Darke	139	82 25	71 82	603	94 50	88 25
Defiance						
Delaware	42	75 50	58 50	447	58 50	56 50
Erie						
Fairfield	73	45 00	42 00	91	57 00	45 00
Fayette						
Franklin						
Fulton	49	33 55	10 75	190	15 75	14 15
Gallia						
Geauga	155	69 25	45 50	161	35 00	31 25
Greene	23	33 00	25 10	443	51 00	48 00
Guernsey	75	60 00	18 10	200	85 00	37 00
Hamilton	28	34 00	94 00	224	86 00	40 50
Hancock						
Hardin	69	49 00	44 00	444	81 75	81 00
Harrison	49	45 00	23 00	180	88 00	25 00
Henry						
Highland	11	35 00	30 00	38	54 00	52 00
Hocking	82	55 75	25 25	127	34 25	30 50
Holmes	61	41 65	23 90	142	44 80	35 85
Huron		18 50		40	44 00	32 00
Jackson						
Jefferson	70	47 00	23 25	415	65 00	50 40
Knex	13	39 00	4 50	70	29 00	10 75
Lake	7	8 50	4 75	39	19 50	15 50
Lawrence	45	10 00	8 00	100	18 00	15 00
Licking	45	51 00	45 00	240	79 00	79 00
Logan	76	117 00	40 00	743	100 00	110 00
Lorain	34	34 50	31 75	118	36 00	35 50
Lucas	86	201 00	201 00	346	129 00	129 00
Madison	17	18 00	9 50	58	36 00	19 50
Mahoning	256	110 75	93 75	358	26 10	35 00
Marion	56	58 00	35 00	375	52 00	51 00
Medina	36	32 70	19 35	119	20 00	18 60
Meigs	52	29 75	14 20	269	33 50	32 00
Mercer	39	58 75	16 40	90	32 50	25 00
Miami	95	55 00	51 00	353	86 00	82 00
Monroe	334	75 00	60 50	257	40 00	28 00
Montgomery						
Morgan	85	10 00	5 50	150	126 50	102 50
Morrow	102	30 00	24 10	441	42 00	40 00
Muskingum	6	111 00	65 75	25	20 50	13 25
Noble	7	10 50	5 00	3	19 50	1 50
Ottawa	24	15 75	7 75	61	40 00	16 00
Paulding	31	35 00	14 25	178	135 50	30 75
Perry	58	34 50	30 50	108	44 00	33 50

TABLE II.—HORTICULTURE AND FLORICULTURE—Concluded.

Counties.	Flowers.			Pickles, canned fruit, jellies, etc.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Pickaway.....						
Pike.....						
Portage.....	100	\$91 25	\$52 00	238	\$44 25	\$39 75
Preble.....	175	66 50	62 50	416	28 00	35 75
Putnam.....	9	14 00	6 00	81	18 00	11 50
Richland.....	13	23 00	15 00	17	48 00	22 00
Ross.....	116	96 00	89 00	50	25 00	19 00
Sandusky.....	200	80 00	80 00	340	160 00	150 00
Scioto.....	8	55 00	40 00			
Seneca.....				288		29 00
Shelby.....						
Stark.....	82	110 00	85 00	566	130 00	130 00
Summit.....	108	197 50	105 38	282	59 25	42 13
Trumbull.....	182			810	31 38	31 38
Tuscarawas.....	59	71 25	59 25	215	30 50	30 50
Union.....	86	71 00	71 00	128	49 50	49 50
Van Wert.....	12	9 00	9 00	737	94 00	94 00
Vinton.....						
Warren.....	70	56 00	67 50	825	31 00	27 50
Washington.....	36	29 80	17 00	18	14 00	10 30
Wayne.....	9	40 00	18 20	79	49 00	31 00
Williams.....						
Wood.....	187	45 00	39 50	386	62 50	47 75
Wyandot.....	20	86 00	30 00			
Totals.....	5,055	\$3,977 70	\$2,975 45	17,023	\$3,606 68	\$3,299 06

TABLE II.—FINE ARTS, ETC.

Counties.	Fine arts.			Textile fabrics.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams.....	88	\$29 50	\$12 00	420	\$151 00	\$118 75
Allen.....	171	49 00	122 00	441	158 00	151 00
Ashland.....						
Ashtabula.....	157	106 00	82 00	466	145 00	81 00
Athens.....	88	85 00	22 00	52	25 00	15 00
Auglaize.....	120	79 00	64 50	292	118 25	83 90
Belmont.....		22 50		73	88 50	20 25
Brown.....	16	9 00	8 00	84	89 00	84 00
Butler.....	148	88 00	83 00	1,028	899 00	880 00
Carroll.....	27	24 00	22 00	201	104 75	135 65
Champaign.....	129	45 00	42 00	269	126 75	90 00
Clark.....	197	192 00	156 00	274	245 00	209 00
Clermont.....						
Clinton.....	36	46 00	25 00	169	78 00	70 00
Columbiana.....						
Coshocton.....	110	60 00	55 00	146	80 00	53 00
Crawford.....	82	86 50	82 00	254	208 90	112 45
Cuyahoga.....	67	28 25	15 50	186		57 00
Darke.....	87	102 50	85 05	572	414 80	338 17
Defiance.....						
Delaware.....	140	86 50	61 00	286	158 25	139 50
Erie.....						
Fairfield.....	171	72 00	65 00	813	140 00	180 00
Fayette.....						
Franklin.....						
Fulton.....	88	51 90	22 30	285	140 95	66 85
Gallia.....						
Geauga.....		47 25	40 00	432	112 50	104 50
Greene.....	182	54 50	82 00	314	157 50	116 75
Guernsey.....	25	42 50	19 00	300	175 00	88 00
Hamilton.....	183	193 00	209 00	242	146 00	126 00
Hancock.....	210		211 75			
Hardin.....	60	156 00	42 00	94	168 00	46 00
Harrison.....	16	65 00	18 00	89	153 00	82 00
Henry.....						
Highland.....	14	82 00	28 00			
Hocking.....	87	154 50	54 25	90	97 00	89 75
Holmes.....	68	47 25	31 50	283	144 25	122 15
Huron.....	47	40 00	17 50	453	110 25	79 75
Jackson.....						
Jefferson.....	50	82 00	19 20	205	108 00	45 50
Knox.....	77	80 00	47 50	245	285 50	88 50
Lake.....	66	89 50	28 50	53	78 50	26 00
Lawrence.....	10	10 00	6 00	10	6 85	6 00
Licking.....	278	203 00	191 00	333	204 00	190 00
Logan.....	509	140 00	165 00	1,071	800 00	527 40
Lorain.....	112	85 00	84 00	245	70 00	66 50
Lucas.....	175	202 00	202 00	503	207 00	199 00
Madison.....	54	57 00	28 00	153	142 75	128 00
Mahoning.....	125	96 00	72 00	205	78 00	70 00
Marion.....	85	75 00	49 00	479	348 00	229 00
Medina.....	86	67 95	49 85	429	128 50	120 00
Meigs.....	51	48 25	26 50	198	92 50	84 75
Mercer.....	25	49 75	16 50	84	102 25	38 60
Miami.....	70	124 00	82 00	759	328 00	265 50
Monroe.....	28	15 00	5 25	180	30 00	22 00
Montgomery.....	11	111 00	16 00	180	179 50	168 50
Morgan.....	123	85 00	82 00	114	50 00	87 00
Morrow.....	86	75 00	61 00	644	182 00	141 00
Muskingum.....	9	81 00	12 50	40	80 00	81 25
Noble.....				5	36 75	4 00
Ottawa.....	18	89 00	9 25	98	83 55	29 00
Paulding.....	97	107 00	21 25	67	107 00	21 25
Perry.....	6	81 50	5 50	152	97 00	46 00

TABLE II.—FINE ARTS, ETC.—Concluded.

Counties.	Fine Arts.			Textile fabrics.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Fickaway						
Fike.....						
Portage.....	24	\$44 75	\$16 50	122	\$65 00	\$41 50
Preble.....	185	75 50	65 75	527	91 50	107 25
Putnam.....	35	56 60	25 00	21	22 00	20 50
Richland.....	80	78 00	48 50	284	85 00	71 50
Ross.....	109	227 60	170 00	867	213 00	150 00
Sandusky.....	85	80 00	75 00	660	2 00 00	250 00
Scioto.....				144	285 00	260 00
Seneca.....	95	49 00	27 50	271	124 00	83 00
Shelby.....						
Stark.....	475	208 00	275 00	623	488 00	306 00
Summit.....	98	148 50	83 00	188	164 50	68 25
Trumbull.....	172	89 75	89 75	252	120 45	120 45
Tuscarawas.....	167	95 00	87 50	412	264 75	185 00
Union.....	100	60 50	60 50	297	164 00	125 00
Van Wert.....	107	50 00	48 00	392	106 00	106 00
Vinton.....						
Warren.....	90	91 00	69 00	250	82 00	58 50
Washington.....	41	197 00	40 75	269	178 20	84 45
Wayne.....	45	77 00	48 60	164	140 00	70 80
Williams.....						
Wood.....	217	125 00	87 00	613	225 00	200 50
Wyandot.....	88	88 00	29 00	216	125 00	108 00
Totals.....	6,964	\$5,486 65	\$4,157 50	21,085	\$10,548 20	\$7,998 37

TABLE II.—NON-ENUMERATED.

Counties.	Non-enumerated.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	15	\$10 00	\$10 00
Allegheny	147		8 00
Ashtabula	12		16 00
Ashland	180	175 00	10 10
Augieize	80		42 85
Belmont	2	13 00	4 00
Brown	534		60 00
Butler			
Carroll	246		159 90
Champaign	84	20 00	14 00
Clark	2	80 00	15 00
Clermont			
Clinton			
Columbiana			
Coshocton	4.0		118 90
Crawford			
Cuyahoga	48		14 50
Darke	2		4 10
Defiance			
Delaware	50	133 10	86 58
Erie			
Fairfield	251	215 00	105 10
Fayette			
Franklin			
Fulton	165	116 20	56 80
Gallia			
Geauga			
Greene			
Guernsey	24	185 00	65 00
Hamilton	54	200 00	280 00
Hancock	119		65 25
Hardin			
Harrison	24	125 00	62 00
Henry			
Highland	64	8 00 00	221 00
Hocking	21	18 50	12 50
Holmes	53	13 50	12 00
Huron	14		
Jackson			
Jefferson	70		9 82
Knox	15	50 00	82 10
Lake	65	94 50	80 50
Lawrence			
Licking	40	117 00	76 00
Logan	18		8 00
Lorain	309	170 50	165 60
Lucas	7		
Madison	59	84 00	72 50
Mahoning	22	15 10	15 10
Marion	211		48 00
Medina	34	27 70	17 35
Meg-	1	50 00	50 00
Mercer			
Miami			
Monroe	237		9 65
Montgomery			
Morgan			
Morrow	17	16 50	14 00
Muskingum			
Noble	21	16 50	16 50
Ottawa			
Paulding	67	107 00	21 25
Perry	11	18 00	2 00

TABLE II.—NON-ENUMERATED—Concluded.

Counties.	Non-enumerated.		
	Number of entries.	Amount offered.	Amount awarded.
Pickaway			
Pike			
Portage	45	\$45 00	37 40
Preble	10	25 00	15 00
Putnam	172	54 00	31 00
Richland			
Ross			
Sandusky	100	160 00	150 00
Scioto	20	70 00	50 00
Seneca			
Shelby			
Stark	208	200 00	103 00
Summit	4	104 00	122 50
Trumbull		47 25	47 25
Tuacarasaw	48		17 00
Union	108	76 00	70 00
Van Wert	117	120 00	120 00
Vinton			
Warren	12		
Washington	14	117 50	25 75
Wayne	82		
Williams			
Wood	28	210 00	237 75
Wyandot			
Totals	4,563	\$3,982 25	\$3,286 92

TABLE III.—RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1891.

Counties.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Adams.....	\$1,405 15	\$149 70	\$276 25	\$581 48	\$1,206 00	\$708 86	\$500 22
Allen.....	3,040 00	457 90	878 50	3,070 10	2,290 00	3,327 00	1,084 18
Ashland.....	3,146 00	690 00	715 00	875 00	2,515 00	585 00	1,670 00
Athens.....	2,040 00	700 00	265 00	680 00	2,400 00	660 00	475 00
Auglaize.....	3,897 70	344 50	646 50	1,723 56	2,174 00	2,220 40	1,459 78
Belmont.....	1,240 60	286 70	173 68	478 69	1,312 81	.....	802 28
Brown.....	2,878 00	72 00	434 74	934 07	1,513 00	473 63	1,788 20
Butler.....	8,952 00	1,420 00	3,143 49	2,515 12	5,886 00	3,289 49	7,237 64
Carroll.....	2,446 01	551 50	619 00	536 61	2,520 50	874 00	1,162 53
Champaign.....	2,932 82	853 00	1,377 00	1,284 81	2,555 50	1,800 00	1,623 56
Clark.....	3,948 86	892 66	1,877 86	2,536 30	5,185 00	500 00	2,672 58
Clermont.....	.....	.....	.....	.....	.....	.....	.....
Clinton.....	1,998 41	918 50	219 00	242 27	2,709 50	275 00	942 15
Columbiana.....	.....	.....	.....	.....	.....	.....	.....
Coshocton.....	4,177 90	1,142 56	810 00	.....	3,592 90	626 85	1,843 21
Crawford.....	1,559 50	537 25	496 00	2,149 27	1,877 85	1,275 18	1,435 50
Cuyahoga.....	.....	.....	.....	.....	.....	.....	.....
Darke.....	640 78	476 00	1,672 78	1,887 58	6,496 51	.....	5,277 86
Defiance.....	.....	.....	.....	.....	.....	.....	.....
Delaware.....	2,077 44	505 00	443 95	1,223 63	2,531 00	90 00	1,518 49
Erie.....	.....	.....	.....	.....	.....	.....	.....
Fairfield.....	8,868 50	1,815 50	2,285 42	1,270 14	5,290 75	1,62 52	8,487 27
Fayette.....	.....	.....	.....	.....	.....	.....	.....
Franklin.....	.....	.....	.....	.....	.....	.....	.....
Fulton.....	1,584 75	87 80	283 00	841 14	640 15	961 50	536 33
Gallia.....	.....	.....	.....	.....	.....	.....	.....
Geauga.....	3,615 72	460 00	530 71	1,987 63	2,275 00	1,600 00	2,313 08
Green.....	2,340 37	861 80	468 25	327 00	2,311 25	100 00	1,128 00
Guernsey.....	1,724 33	206 20	167 00	1,548 65	666 00	2,021 12	818 90
Hamilton.....	5,675 75	2,975 00	1,966 25	2,253 85	6,808 00	759 22	4,249 51
Hancock.....	.....	.....	.....	.....	.....	.....	.....
Harbin.....	2,560 25	628 00	512 00	328 50	2,415 00	718 91	894 94
Harrison.....	2,218 25	268 00	1,053 60	245 00	2,425 25	.....	1,860 00
Henry.....	.....	.....	.....	.....	.....	.....	.....
Highland.....	1,659 50	711 50	421 00	.....	1,938 00	.....	881 00
Hocking.....	1,677 00	752 00	253 95	1,293 45	2,402 50	1,143 26	550 34
Holmes.....	2,205 00	166 85	224 50	1,517 35	2,449 50	157 12	1,548 08
Huron.....	1,678 45	728 00	361 75	686 09	1,858 00	850 00	1,441 74
Jackson.....	.....	.....	.....	.....	.....	.....	.....
Jefferson.....	1,106 75	283 50	190 15	437 21	1,220 87	.....	489 17
Knox.....	2,140 00	965 00	294 00	.....	2,502 60	.....	681 15
Lake.....	2,249 59	587 50	288 70	571 73	2,763 25	150 00	2,018 58
Lawrence.....	520 00	176 00	228 00	1,470 00	850 00	1,458 00	546 00
Licking.....	5,949 20	1,885 40	978 50	1,041 00	4,835 20	1,092 26	3,039 52
Logan.....	3,629 20	683 00	1,099 00	3,662 76	3,666 25	3,329 94	1,957 77
Lorain.....	2,948 28	746 50	200 00	570 00	1,813 55	500 00	812 40
Lucas.....	11,766 40	1,348 00	2,295 08	.....	7,998 00	846 28	6,594 86
Madison.....	3,599 71	1,130 00	703 50	796 94	2,701 50	1,050 03	2,448 22
Mahoning.....	3,548 50	555 50	432 50	754 49	2,292 75	283 48	2,348 28
Marion.....	8,845 75	605 00	900 95	1,655 64	4,241 80	1,111 50	2,335 50
Medina.....	2,913 62	225 35	569 81	126 44	2,063 83	1,117 17	846 63
Meigs.....	2,432 45	405 30	134 00	102 17	1,691 95	.....	711 07
Mercer.....	1,764 00	525 48	985 05	475 55	470 20	839 10	2,894 78
Miami.....	5,110 50	476 80	762 15	1,991 13	3,734 50	2,255 80	1,605 69
Monroe.....	1,887 86	205 15	77 50	251 40	910 40	1,013 54	.....
Montgomery.....	4,800 90	1,081 43	743 50	500 92	4,024 25	68 00	1,260 00
Morgan.....	1,111 10	210 00	169 87	675 00	972 50	400 00	1,062 94
Morrow.....	2,963 50	806 27	655 00	495 45	2,348 00	855 71	1,304 74
Muskingum.....	2,791 94	654 65	1,272 48	826 82	2,387 75	565 88	2,641 76
Noble.....	292 65	189 75	31 00	207 24	469 00	120 13	55 00
Ottawa.....	412 65	35 00	50 00	28 75	495 33	.....	171 00
Paulding.....	2,008 00	185 00	686 00	678 15	1,894 00	150 00	1,462 00
Perry.....	786 60	54 22	166 17	125 06	968 85	270 79	530 44
Pickaway.....	.....	.....	.....	.....	.....	.....	.....

TABLE III.—RECEIPTS, DISBURSEMENTS, ETC.—Concluded.

Counties.	Amount received from sale admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Pike.....	\$2,388 75	\$779 70	\$516 40	\$787 18	\$2,241 95	\$635 00	\$1,512 57
Portage.....	84 8 60	34 00	917 50	428 00	2,753 75	541 01	1,977 41
Preble.....	3,546 30	694 00	9 2 10	1,585 79	2,562 70	352 43	1,821 11
Putnam.....	2,557 30	580 70	648 50	2,295 32	2,357 70	1,488 49	1,016 44
Richland.....	7,211 23	.....	5,067 55	505 68	5,620 00	.....	7,053 60
Ross.....	5,101 50	852 00	482 00	211 10	5,200 00	160 00	942 35
Sandusky.....	3,092 70	247 75	630 65	3,747 80	500 00	300 00	5,595 25
Scioto.....	1,391 00	114 00	624 00	645 00	1,358 00	.....	1,437 00
Seneca.....	3,264 80	235 10	699 50	1,630 58	2,512 10	771 17	2,546 71
Shelby.....	6,947 60	763 96	1,956 81	2,323 26	4,756 01	398 61	3,721 26
Stark.....	8,034 89	1,224 92	1,941 00	814 75	4,247 50	1,400 00	4,344 01
Summit.....	3,401 10	833 00	1,278 34	889 18	2,539 98	1,159 39	1,978 43
Trumbull.....	2,167 55	434 60	507 00	.....	1,453 85	973 04	134 39
Tuscarawas.....	3,167 75	617 25	765 00	217 06	2,900 70	775 00	1,669 90
Union.....	4,807 01	.....	967 20	1,144 54	2,830 02	2,822 49	1,530 81
Van Wert.....	.....	.....	.....	.....	.....	.....	.....
Vinton.....	2,435 20	533 10	704 50	446 00	2,002 25	300 00	1,552 25
Warren.....	2,126 10	4 4 90	102 50	539 79	1,458 20	650 00	1,192 56
Washington.....	1,975 36	470 80	345 40	770 52	1,874 10	160 10	1,485 72
Wayne.....	.....	.....	.....	.....	.....	.....	.....
Williams.....	4,659 25	547 70	1,063 25	619 18	1,840 75	1,030 00	4,209 35
Wood.....	1,973 21	308 05	411 00	707 47	1,170 99	445 86	1,782 88
Wyandot.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	\$220,823 85	\$43,067 47	\$56,681 71	\$70,998 88	\$183,120 17	\$55,246 91	\$135,615 81

Crop and Live Stock Statistics

AS ESTIMATED BY THE

OHIO STATE BOARD OF AGRICULTURE,

FROM RETURNS RECEIVED FROM ITS CORPS OF REGULAR
TOWNSHIP CROP CORRESPONDENTS,

AT THE CLOSE OF THE SEASON OF 1891.

EXPLANATORY.

The following crop tables, representing the estimated result and condition of crops and live stock, as reported by the regular correspondents of the Board, for the months of October, November and December, 1891, give a fair idea and summary of the important crops of the year.

The October report on total product of wheat, oats and barley, is based on returns of actual threshing throughout the state, thus securing the fair average product per acre for the entire area, and knowing the whole area seeded to the respective crops, the Board is enabled to give approximately correct totals.

The area of wheat seeded for the harvest of 1892, as shown in the November 1, 1891, crop estimates, is ascertained by percentage comparison with the actual acreage seeded for the harvest of 1891, the percentage being reported by the correspondents, and revised and carefully calculated by the Board.

The December 1, 1891, report, treats more especially on the condition of the growing wheat and the result of the corn crop.

Preceding the tabular reports for each of the months named, is a summarized statement of the whole, with remarks and deductions on the most important items.

These reports and tables are published in lieu of the annual crop statistics as returned by township assessors to the county auditors, and heretofore published in the state agricultural report. The early publication of the present state report precludes the publication of the statistics

as returned to county auditors, by reason of the fact that the returns can not be received from the county auditors until about October of the year succeeding the results reported, and then the time required to tabulate them, makes the report nearly two years old before it reaches the public, and is of little value, except as a matter of record, as the crops reported have long since been disposed of.

The annual agricultural report has heretofore not been published and ready for distribution until about December of the next year following the year of the report. At such a late date the regular farm statistics for the preceding year could be included, but it being desirable and this year possible, to publish the report at a much earlier day, the crop reports of the Board, as follows, have been substituted. The other statistics will be published in future reports as a matter of record.

ACREAGE AND PRODUCT OF WHEAT AND THE PERCENT- AGE OF OTHER CROPS FOR OCTOBER 1, 1891.

The following report for average product of wheat, oats and barley is based on returns from actual threshing done in all parts of the State, and carefully compared with the regular reports received from township crop correspondents. The acreage given is that estimated last fall at or near seeding time, and there has been no occasion to reduce this area by reason of plowing up.

Wheat—Area seeded for harvest of 1891.....	2,575,056 acres.
“ Average product per acre estimated from threshers’ re- turns	17.5 bushels.
“ Estimated total product.....	45,063,480 bushels.
“ Quality compared with a full average.....	98 per cent.
“ Crop of 1890 still in producers’ hands.....	4 per cent.
Oats—Average product per acre estimated from threshers’ returns	30 bushels.
“ Estimated total product	26,608,380 bushels.
“ Quality compared with a full average	89 per cent.
Barley—Area seeded last fall	31,524 acres.
“ Average product per acre estimated from threshers’ returns.....	27 bushels.
“ Estimated total product	851,148 bushels.
“ Quality compared with a full average	93 per cent.
Rye—Total crop compared with a full average	89 “
Corn—Prospect compared with a full average.....	94 “
Potatoes—Prospect compared with a full average.....	97 “
Tobacco—Prospect compared with a full average	91 “
Pastures—Condition compared with a full average.....	78 “
Apples—Prospect compared with a full average.....	53 “

The present wheat crop is above a fair average for this state. In fact it is the largest crop since 1880, in which year was produced forty-eight and a half millions bushels. In that year, however, the area exceeded the present crop by about two hundred and fifty thousand acres. The average yield per acre for the crop of 1891 is 17.5 bushels, which is the largest average found in a record extending back to 1850, except that of 1879, when the average was 17.78 bushels. The total yield, however, for 1879 was 4,011,360 bushels less than the crop of 1891, showing that the causes affecting the acreage are as important as the climatic conditions affecting the growth and maturity of the plant.

It is a common remark that we may not expect a large crop of wheat and corn the same year. While this may be true generally, there seems to be an exception to this, as to all general rules. The corn crop of 1880 was one of the largest in the history of the state. The largest yield of corn per acre was in 1872, when the average was 40.9 bushels, while the average yield per acre of wheat was 11.22 bushels. The next highest yield of corn was 39.8 in 1874 and the yield of wheat 14.51 bushels. In 1880 both corn and wheat gave yields far above the average of either, and the average of both wheat and corn for 1891 will probably be high. The farmers are to be congratulated on the encouraging outlook for these two leading crops. Though corn is two weeks late, the great bulk of it is out of danger from frosts such as usually occur in October. A heavy freeze would damage much. The abnormally warm, dry weather of September favored the maturing of the crop. In the southern part of the state the dry weather of August shortened the yield of sandy or bottom lands. The work of shocking corn is far advanced and the dry weather has been favorable to the curing of the fodder and grain.

The fall seeding has been delayed for want of rain. The early seeding has started unevenly and the plants lack vigor. Plowing has been retarded and it is now probable that enough fields will remain unplowed to reduce the acreage of the coming crop.

The tobacco crop is promising and has been cut and housed in excellent condition.

The potato crop is large and the quality good. There are very few reports of rot.

The pastures are generally poor and in some parts of the state drafts have begun on the winter supply of feed.

**AOREAGE, PRODUCT AND CONDITION OF CROPS—REPORT OF OHIO
BOARD OF AGRICULTURE FOR OCTOBER 1, 1891.**

Counties.	Wheat.					Oats.	
	Acres sown.	Average product per acre—Bushels.	Total bushels produced.	Quality compared with average—Per cent.	Per cent. of crop of 1890 still in producers' hands.	Average product per acre—Bushels.	Quality compared with average—Per cent.
Adams	18,711	12.8	230,145	94	8	12	55
Allen	25,129	23.8	598,070	100	.....	33	95
Ashland	42,359	18.5	783,641	98	16	38	95
Ashtabula	14,434	20.0	288,680	100	1	41	100
Athens	10,483	15.0	157,245	100	.....	16	75
Auglaize	33,400	21.0	701,400	93	.....	28	84
Belmont	25,324	15.4	389,989	92	6	27	82
Brown	22,922	15.0	343,830	94	3	12	60
Butler	55,810	17.8	993,438	98	2	19	75
Carroll	12,006	14.5	174,087	100	1	36	100
Champaign	48,088	23.0	1,106,024	99	.....	30	93
Clark	76,829	19.9	1,428,898	97	1	33	90
Clermont	20,140	14.7	296,058	100	1	20	82
Clinton	37,441	17.5	730,099	100	.....	30	85
Columbiana	23,698	16.1	381,537	99	5	41	99
Coshocton	31,932	17.2	549,230	97	1	36	95
Crawford	27,555	17.5	482,112	99	5	39	91
Cuyahoga	13,290	19.5	259,155	89	7	36	92
Darke	59,939	22.4	1,342,633	101	4	28	82
Defiance	21,974	22.3	490,020	101	4	32	90
Delaware	29,677	18.7	554,960	103	1	31	88
Erie	20,135	21.0	422,835	100	.....	32	100
Fairfield	46,651	17.9	835,058	100	2	26	9
Fayette	33,541	20.0	670,820	98	.....	20	75
Franklin	54,705	16.3	899,691	102	6	25	94
Fulton	19,703	22.7	447,235	102	7	30	87
Gallia	20,422	20.1	410,482	99	1	25	87
Geauga	9,386	19.4	182,088	99	4	38	99
Greene	47,714	18.2	870,394	95	.....	29	85
Guernsey	16,286	20.0	325,720	100	5	30	90
Hamilton	12,029	20.1	241,783	103	1	30	83
Hancock	42,483	22.6	960,116	99	3	29	83
Hardin	48,608	17.0	826,336	95	4	28	82
Harrison	9,516	18.0	123,708	89	10	28	95
Henry	23,468	20.6	483,441	97	7	34	94
Highland	37,814	11.1	419,735	100	4	15	73
Hocking	10,394	14.2	147,596	98	5	29	100
Holmes	31,160	17.1	536,256	97	.....	35	100
Huron	32,508	20.6	669,665	100	3	39	97
Jackson	9,682	12.2	118,120	100	7	21	90
Jackson	14,455	18.5	267,417	97	.....	33	98
Knox	8,981	18.3	182,652	100	3	34	100
Lake	9,950	19.1	191,045	102	10	37	95
Lawrence	8,812	10.7	94,288	94	1	16	83
Licking	39,429	17.3	682,121	97	10	25	80
Logan	33,445	20.6	688,367	98	5	29	94

ACREAGE, PRODUCT AND CONDITION OF CROPS, ETC.—Continued.

Counties.	Wheat.					Oats.	
	Acres sown.	Average product per acre—Bushels.	Total bushels produced.	Quality compared with average—Per cent.	Per cent. of crop of 1880 still in producers' hands.	Average product per acre—Bushels.	Quality compared with average—Per cent.
Lorain	21,993	15.3	836,493	98	5	38	98
Lucas	18,849	25.7	395,119	103	1	36	91
Madison	32,900	21.4	704,060	100	.....	29	88
Mahoning	17,343	15.9	275,753	97	8	41	100
Marion	24,431	18.0	441,758	100	1	35	98
Medina	25,404	18.8	477,695	100	10	39	99
Meigs	16,214	14.1	228,817	97	20	19	82
Mercer	25,884	23.7	618,451	100	2	24	88
Miami	59,640	20.0	1,192,800	98	10	33	87
Monroe	21,127	14.3	302,116	98	12	27	90
Montgomery	42,626	20.7	881,858	100	1	27	68
Morgan	13,860	14.0	194,040	95	5	28	83
Morrow	18,466	17.5	323,155	100	2	33	95
Muskingum	26,587	11.2	297,774	94	20	26	90
Noble	14,549	10.4	151,809	97	7	40	97
Ottawa	15,497	22.7	351,782	100	6	30	80
Paulding	11,156	25.1	280,015	102	1	33	95
Perry	16,463	16.1	265,054	98	5	29	100
Pickaway	64,940	18.2	1,171,908	99	2	23	86
Pike	16,077	16.0	257,232	100	5	28	88
Portage	23,974	17.6	441,742	99	2	40	102
Preble	40,010	21.0	840,210	95	5	24	88
Putnam	30,638	23.1	707,612	100	3	34	90
Richland	36,671	18.2	667,412	93	2	34	82
Ross	51,988	16.3	847,404	97	10	24	76
Sandusky	41,865	20.1	841,486	100	.....	37	95
Scioto	21,881	16.0	350,196	100	2	15	80
Seneca	57,305	21.2	1,214,866	102	4	33	94
Shelby	39,629	19.1	758,914	101	15	28	81
Stark	74,248	17.0	1,262,216	96	6	40	96
Summit	33,730	19.0	640,870	93	4	39	98
Trumbull	14,534	16.0	232,544	99	2	36	99
Tuscarawas	30,746	19.8	608,779	94	7	33	93
Union	25,208	18.5	466,348	99	12	25	77
Van Wert	19,875	24.7	490,912	100	.....	37	75
Vinton	6,864	12.3	84,427	99	4	16	75
Warren	37,502	18.3	686,286	99	15	24	82
Washington	28,754	18.2	527,552	99	1	22	90
Wayne	55,379	17.5	969,132	98	4	41	97
Williams	21,459	21.1	452,785	100	2	36	82
Wood	33,464	23.9	799,787	100	9	38	90
Wyandot	27,714	21.2	587,587	101	4	30	93
Totals	2,575,056	.....	45,063,480	.....	.....	.....	.....
Average per cent..	.....	17.5	.....	98	4	30	89

ACREAGE, PRODUCT AND CONDITION OF CROPS, ETC.—Continued.

Counties.	Barley.				Rye.
	Acres sown.	Average product per acre —Bushels.	Total bushels produced.	Quality compared with an average—Per cent.	Total crop compared with full average—Per cent.
Adams	16	20	320	95	.....
Allen	147	20	2,940	95	88
Ashland	510	20	10,200	70	95
Ashtabula	961	21	20,181	100	95
Athens .....	.....	.....	.....	.....	.....
Auglaize	575	33	18,475	93	93
Belmont	82	26	2,132	95	80
Brown .....	.....	.....	.....	.....	.....
Butler	1,467	37	54,249	93	93
Carroll	10	20	200	90	.....
Champaign	102	26	2,652	98	100
Clark	84	25	2,100	98	93
Clermont .....	.....	.....	.....	.....	96
Clinton	24	32	768	96	.....
Columbiana	92	16	1,472	100	95
Coshocton	21	20	420	90	90
Crawford	467	30	14,010	96	80
Cuyahoga	82	27	2,214	95	93
Darke	326	33	10,758	90	97
Defiance	1,744	25	43,600	90	96
Delaware	36	27	972	93	95
Erie	2,089	22	45,958	100	100
Fairfield	96	25	2,500	95	97
Fayette	764	22	16,808	96	78
Franklin	10	24	240	95	57
Fulton	2,465	20	49,300	60	95
Gallia .....	.....	.....	.....	.....	100
Geauga	101	20	2,020	100	92
Greene	90	30	2,700	100	88
Guernsey	33	23	759	93	.....
Hamilton	946	31	29,326	100	85
Hancock	170	25	4,250	93	100
Hardin	67	20	1,340	94	93
Harrison	8	20	160	94	85
Henry	1,330	19	5,270	75	84
Highland	10	20	200	90	95
Hocking .....	.....	.....	.....	.....	100
Holmes	80	25	2,000	100	95
Huron	1,019	25	25,475	100	.....
Jackson	2	25	50	90	.....
Jefferson	50	26	1,300	98	100
Knox	123	31	3,813	100	90
Lake	461	25	11,525	93	90
Lawrence .....	.....	.....	.....	.....	95
Licking	200	28	4,600	85	74
Logan	100	16	1,600	95	70
Lorain	850	35	29,750	100

CROP AND LIVE STOCK STATISTICS.

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ACREAGE, PRODUCT AND CONDITION OF CROPS, ETC.—Continued.

Counties.	Barley.				Rye.
	Acres sown.	Average product per acre — Bushels.	Total bushels produced.	Quality compared with an average—Per cent.	Total crop compared with full average—Per cent.
Lucas	1,432	22	31,504	80	100
Madison	44	40	1,760	100	.....
Mahoning	89	20	780	100	90
Marion	646	24	15,504	90	80
Medina	193	28	5,384	95	.....
Meigs	54	24	1,296	96	87
Mercer	801	40	12,040	100	105
Miami	418	35	14,630	96	87
Monroe	5	24	90	96	95
Montgomery	1,079	80	82,370	95	85
Morgan .....	.....	.....	.....	.....	90
Morrow	100	25	2,500	95	91
Muskingum	56	22	1,232	90	92
Noble	6	25	150	95	85
Ottawa	2,256	26	58,656	99	58
Paulding	291	26	7,566	100	97
Perry .....	.....	.....	.....	.....	100
Pickaway	88	80	2,540	93	82
Pike	78	25	1,950	94	60
Portage	21	31	651	90	100
Preble	238	30	6,990	95	90
Putnam	682	33	22,506	98	97
Richland	695	32	22,240	90	88
Ross	4	18	72	90	101
Sandusky	593	38	22,534	100	100
Scioto	67	17	1,139	76	.....
Seneca	492	34	16,728	95	80
Shelby	873	31	27,063	95	80
Stark	219	32	7,008	97	92
Summit	74	32	2,368	96	50
Trumbull	6	31	186	96	95
Tuscarawas	77	32	2,354	97	85
Union	39	27	1,053	94	97
Van Wert	346	32	11,072	93	91
Vinton .....	.....	.....	.....	.....	85
Warren	621	40	24,849	77	80
Washington .....	.....	.....	.....	.....	105
Wayne	190	27	5,130	94	50
Williams	452	29	13,108	90	93
Wood	1,001	29	29,029	90	76
Wyandot	200	23	4,600	95	100
Totals	81,524	.....	851,146	.....	.....
Average per cent .....	.....	27	.....	93	89

ACREAGE, PRODUCT AND CONDITION OF CROPS, ETC.—Continued.

Counties.	Corn.	Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect compared with full average—Per cent.	Probable total crop compared with full average—Per cent.	Conditions—Per cent.	Conditions—Per cent.	Prospect—Per cent.
Adams	89	91	88	89	97
Allen	93	100	100	52	87
Ashland	95	102	100	58	33
Ashtabula	92	100	100	91	46
Athens	100	100	.....	90	80
Auglaize	88	90	95	68	70
Belmont	97	105	75	86	23
Brown	89	91	88	89	97
Butler	100	102	88	88	88
Carroll	100	100	.....	78	20
Champaign	100	107	.....	92	25
Clark	92	101	80	61	58
Clermont	99	94	88	80	92
Clinton	100	100	.....	80	100
Columbiana	90	105	101	63	40
Coshocton	97	83	.....	79	10
Crawford	84	100	.....	87	20
Cuyahoga	87	86	.....	52	23
Darke	89	95	86	71	79
Defiance	97	104	60	61	68
Delaware	96	98	.....	70	15
Erie	75	80	.....	70	50
Fairfield	99	102	.....	87	76
Fayette	110	100	.....	78	75
Franklin	92	91	.....	79	33
Fulton	99	103	100	78	53
Gallia	107	105	103	90	95
Geauga	93	92	.....	87	34
Greene	97	98	93	73	77
Guernsey	100	100	.....	95	65
Hamilton	103	125	100	98	100
Hancock	110	105	.....	70	40
Hardin	90	90	.....	83	38
Harrison	95	99	.....	68	27
Henry	100	99	.....	67	41
Highland	105	108	87	62	97
Hocking	90	100	.....	85	35
Holmes	99	95	.....	45	30
Huron	86	96	.....	46	10
Jackson	93	107	103	90	50
Jefferson	83	100	.....	70	40
Knox	92	98	.....	67	10
Lake	78	87	80	53	20
Lawrence	91	92	92	86	78
Licking	96	86	.....	52	26
Logan	84	92	75	58	29
Lorain	73	85	.....	51	10

ACREAGE, PRODUCT AND CONDITION OF CROPS, ETC.—Concluded.

Counties.	Corn.	Potatoes.	Tobacco.	Pastures.	Apples.
	Prospect compared with full average—Per cent.	Probable total crop compared with full average—Per cent.	Conditions—Per cent.	Conditions—Per cent.	Prospect—Per cent.
Lucas	93	97	.....	69	21
Madison	105	108	.....	85	28
Mahoning	89	85	.....	58	23
Marion	91	97	.....	47	11
Medina	97	96	91	70	18
Meigs	95	89	.....	90	74
Mercer	88	100	90	68	100
Miami	95	100	97	71	78
Monroe	100	103	90	90	57
Montgomery	93	100	100	100	95
Morgan	98	108	84	87	59
Morrow	90	94	100	59	82
Muskingum	98	95	83	78	28
Noble	98	105	83	90	24
Ottawa	71	82	.....	84	50
Paulding	102	105	.....	93	53
Perry	90	100	.....	86	35
Pickaway	97	101	.....	88	65
Pike	100	105	80	90	100
Portage	96	102	.....	86	24
Preble	88	103	100	83	95
Putnam	107	105	.....	88	50
Richland	80	88	.....	80	83
Ross	100	103	80	91	92
Sandusky	83	88	.....	60	20
Scioto	105	95	50	69	88
Seneca	94	100	87	50	10
Shelby	96	101	75	84	92
Stark	97	100	.....	68	22
Summit	75	93	.....	33	10
Trumbull	97	94	.....	81	43
Tuscarawas	90	92	.....	55	38
Union	96	102	100	65	35
Van Wert	102	95	.....	74	75
Vinton	101	91	.....	85	72
Warren	99	100	95	89	97
Washington	106	87	99	92	47
Wayne	92	91	98	68	11
Williams	102	97	.....	70	38
Wood	97	84	.....	59	31
Wyandot	81	100	.....	28	11
Average per cent.....	94	97	91	73	53

CONDITION AND PROSPECT OF CROPS AND LIVE STOCK FOR NOVEMBER 1, 1891.

The following estimates are based on returns from the regular township crop correspondents, carefully tabulated and arranged for the counties and the State. The table represents about five hundred reports from all sections of the state:

Wheat—Area seeded for harvest of 1891.....	2,613,281 acres.
“ Sown this fall for harvest of 1892, compared with last year	106 per cent.
“ Estimated area for harvest of 1892.....	2,795,215 acres.
“ Condition of plant compared with full average.....	76 per cent.
“ Average date of seeding	September 25.
“ Condition of soil at time of seeding.....	Mostly fair.
Barley—Acreage compared with last year.....	86 per cent.
“ Condition compared with a full average.....	77 “
Corn—Prospect compared with a full average.....	95 “
Buckwheat—Prospect compared with a full average.....	80 “
Clover seed—Prospect compared with a full average.....	47 “
Potatoes—Average product per acre.....	99 bushels.
“ Affected by rot	8 per cent.
Apples—Product compared with a full average.....	45 “
Hogs—Condition compared with a full average.....	91 “
“ To be fattened, compared with last year.....	83 “
Commercial Fertilizers—Farmers using on wheat crop.....	35 “

The wheat area seeded this fall for the harvest of 1892 is estimated at 106 per cent., as compared with that seeded for the harvest of 1891, an increase of nearly 182,000 acres. This increase is not general throughout the State, as thirty-nine counties report a decrease compared with last year. The increase, however, is in many counties representing large area, so that for the State there is an increase on the total area seeded. The increased area has probably been induced by the excellent crop and better prices. In the counties falling short, there was a shortage of rainfall, making it impossible to prepare the ground for seeding.

The condition of growing wheat is 24 per cent. short of an average condition. The plant is generally short, and on thin land, seeded late, it is feeble. Already some farmers have re-seeded their land because of the poor stand secured from first seeding, and this late seeding has started poorly because of drouth.

The corn area for 1891, as returned by township assessors, is 2,678,842 acres. It is estimated from the reports of correspondents that the corn

crop will average, for the State, between thirty two and thirty-three bushels of shelled corn per acre, and on this basis the total crop will reach about eighty-six and a half millions of bushels, against sixty-three and a half millions produced in 1890.

The area of potatoes is 121,218 acres, an increase over 1890 of about 6,000 acres. The estimated product per acre is 99 bushels, showing a prospect for the state of 12,000,582 bushels for 1891, an increase over the short crop of 1890 of about seven millions of bushels.

The prospect for clover seed is only 47 per cent. as compared with a full average. Drouth, grasshoppers and the clover midge are responsible, to a great extent, for this light prospect.

There is a shortage on hogs to be fattened of 17 per cent. as compared with last year. This has been occasioned by the short corn crop last year, causing farmers to sell off the hogs very close. There are reports of cholera in some of the counties producing the largest number of hogs.

**CONDITION OF CROPS AND LIVE STOCK NOVEMBER 1, 1891—OFFICIAL
REPORT OF THE OHIO STATE BOARD OF AGRICULTURE.**

Counties.	Wheat.					
	Acreage sown for harvest of 1891.	Sown this fall for harvest of 1892, compared with last year—Per cent.	Total estimated acres for harvest of 1892.	Condition of plant compared with full average—Per cent.	When seeded, days after September 1.	Condition of soil at time of seeding.
Adams	20,877	95	19,359	76	41	Good.
Allen	27,845	95	26,453	65	28	Fair.
Ashland	41,936	98	41,097	72	20	"
Ashtabula	13,623	102	13,896	86	16	Good.
Athens	9,586	100	9,586	83	25	Bad.
Auglaize	40,839	99	39,936	70	24	"
Belmont	21,008	102	21,428	80	18	Fair.
Brown	26,478	100	26,478	76	41	Good.
Butler	63,240	101	62,873	80	27	Fair.
Carroll	14,280	100	14,280	76	18	"
Champaign	44,904	100	44,904	83	24	"
Clark	82,941	99	82,611	73	34	"
Clermont	21,121	100	21,121	80	32	"
Clinton	88,189	102	88,953	78	28	"
Columbiana	22,003	98	21,563	68	14	"
Coshocton	34,217	98	33,533	58	24	Bad.
Crawford	29,772	99	29,474	72	28	"
Cuyahoga	11,164	97	10,829	73	21	Fair.
Darke	66,285	100	66,285	73	22	Good.
Defiance	29,303	105	30,768	85	23	Fair.
Delaware	21,963	102	22,402	60	26	"
Erie	18,125	99	17,944	69	36	Bad.
Fairfield	51,540	98	50,509	64	35	"
Fayette	33,952	101	34,292	78	38	Fair.
Franklin	72,105	96	69,321	75	34	"
Fulton	29,008	95	27,558	95	18	Good.
Gallia	16,501	103	16,996	79	40	Fair.
Geauga	3,250	105	3,413	98	12	Good.
Greene	52,169	105	54,777	84	31	Fair.
Guernsey	17,708	96	17,000	63	27	"
Hamilton	14,197	94	13,345	78	33	"
Hancock	43,328	101	43,761	76	26	Bad.
Hardin	32,844	100	32,844	68	31	"
Harrison	10,889	100	10,889	89	18	Fair.
Henry	32,207	106	34,140	81	21	Bad.
Highland	39,787	99	39,370	78	32	Fair.
Hocking	10,469	103	10,783	73	27	Bad.
Holmes	33,517	98	32,847	75	37	Fair.
Huron	30,262	98	28,143	57	27	Bad.
Jackson	9,363	93	8,895	76	38	Fair.
Jefferson	14,155	97	13,730	80	20	Bad.
Knox	34,632	106	37,710	61	23	Fair.
Lake	5,734	98	5,619	90	19	"
Lawrence	12,611	93	11,728	71	37	"
Licking	38,874	98	38,097	68	23	"
Logan	34,978	97	33,929	58	26	"

CONDITION OF CROPS AND LIVE STOCK, ETC.—Continued.

Counties.	Wheat.					
	Acres sown for harvest of 1891.	Sown this fall for harvest of 1892, compared with last year—Per cent.	Total estimated acres for harvest of 1892.	Condition of plant compared with full average—Per cent.	When seeded, days after September 1.	Condition of soil at time of seeding.
Lorain	22,578	97	21,901	62	32	Fair.
Lucas	23,321	96	22,388	78	20	"
Madison	33,901	99	33,562	80	38	"
Mahoning	21,122	100	21,122	74	16	"
Marion	25,826	95	24,535	76	19	Bad.
Medina	24,435	100	24,435	81	14	Fair.
Meigs	19,181	94	18,130	78	38	"
Mercer	32,086	100	32,086	83	17	Good.
Miami	49,935	106	52,931	68	24	Bad.
Monroe	18,604	101	18,790	89	22	"
Montgomery	45,149	100	45,149	90	28	Fair.
Morgan	12,234	104	12,723	80	31	"
Morrow	18,475	101	18,660	76	18	"
Muskingum	40,723	96	39,094	70	27	"
Noble	14,551	107	15,570	90	30	"
Ottawa	17,551	92	16,147	60	31	Bad.
Paulding	18,212	108	19,669	78	32	Fair.
Perry	15,066	98	14,765	85	28	"
Pickaway	55,800	100	55,800	76	30	"
Pike	14,458	105	15,180	90	31	"
Portage	21,533	101	21,749	75	15	Good.
Preble	39,849	101	40,248	57	25	Fair.
Putnam	33,140	110	36,454	70	25	"
Richland	52,696	98	51,632	82	16	"
Ross	54,050	97	52,329	80	27	"
Sandusky	44,181	99	43,739	71	19	"
Scioto	12,718	103	13,100	90	35	Bad.
Seneca	58,697	102	59,871	72	26	"
Shelby	41,515	100	41,515	83	17	Good.
Stark	48,999	98	47,619	80	14	Fair.
Summit	29,782	102	30,378	65	17	"
Trumbull	14,628	100	14,628	86	15	Good.
Tuscarawas	32,626	95	30,995	70	18	Fair.
Union	27,096	96	26,012	71	31	"
Van Wert	25,525	104	26,545	80	39	"
Vinton	9,386	100	9,386	87	30	"
Warren	34,661	102	35,354	81	30	Bad.
Washington	26,955	102	27,497	86	35	Good.
Wayne	56,819	100	56,819	80	18	Fair.
Williams	28,946	100	28,946	70	10	Bad.
Wood	43,164	100	43,164	75	26	Fair.
Wyandot	30,354	93	28,229	52	25	"
Average per cent.....		106		76	*	†
Totals	2,613,281		2,795,215			

* Average date September 25.

† Good, 11 counties; bad, 20 counties; fair, 57 counties.

CONDITION OF CROPS AND LIVE STOCK, ETC.—Continued.

Counties.	Barley.		Corn.	Buck- wheat.	Clover seed.
	Acres sown com- pared with last year —Per cent.	Condition compared with full average— Per cent.	Prospect compared with full average— Per cent.	Prospect compared with full average— Per cent.	Prospect compared with full average— Per cent.
Adams	50	60	92	.....	54
Allen .....	.....	.....	85	70	10
Ashland	88	88	90	100	60
Ashtabula	79	90	83	80	55
Athens .....	.....	.....	99	.....	90
Auglaize	100	63	82	43	15
Belmont	95	100	104	85	73
Brown	50	60	92	.....	54
Butler	98	83	93	100	93
Carroll .....	.....	.....	102	92	24
Champaign .....	.....	.....	102	100	15
Clark .....	.....	.....	92	48	48
Clermont .....	.....	.....	96	75	75
Clinton	90	80	93	57	68
Columbiana .....	.....	.....	83	48	23
Coshocton .....	.....	.....	98	74	50
Crawford .....	.....	.....	81	90	10
Cuyahoga .....	.....	.....	89	75	58
Darke	68	75	78	78	36
Defiance	75	80	98	86	47
Delaware	100	100	101	92	36
Erie	90	90	79	78	65
Fairfield .....	.....	.....	98	78	48
Fayette .....	.....	.....	103	.....	58
Franklin .....	.....	.....	99	75	47
Fulton .....	.....	.....	78	85	40
Gallia .....	.....	.....	105	75	30
Geauga	95	100	100	93	88
Greene	100	90	102	.....	54
Guernsey .....	.....	.....	97	93	51
Hamilton	100	95	98	80	.....
Hancock .....	.....	.....	95	83	10
Hardin .....	.....	.....	88	70	23
Harrison .....	.....	.....	100	45	35
Henry .....	.....	.....	101	78	51
Highland	100	80	105	.....	88
Hocking .....	.....	.....	98	88	65
Holmes	100	75	98	75	66
Huron .....	.....	.....	78	85	20
Jackson .....	.....	.....	86	88	80
Jefferson .....	.....	.....	97	90	20
Knox .....	.....	.....	97	75	26
Lake .....	.....	.....	72	53	45
Lawrence .....	.....	.....	85	78	12
Licking .....	.....	.....	104	80	25
Logan	75	50	52	80	15
Lorain	90	80	79	100	87
Lucas .....	.....	.....	91	83	82
Madison	90	80	108	100	89

CONDITION OF CROPS AND LIVE STOCK, ETC.—Continued.

Counties.	Barley.		Corn.	Buck- wheat.	Clover seed.
	Acres sown com- pared with last year —Per cent.	Condition compared with full average— Per cent.	Prospect compared with full average— Per cent.	Prospect compared with full average— Per cent.	Prospect compared with full average— Per cent.
Mahoning			92	92	45
Marion			98	100	32
Medina			94	85	22
Meigs			93	100	58
Mercer	100	91	96	98	15
Miami	90	73	99	45	39
Monroe			100	83	61
Montgomery	100	95	95	.....	78
Morgan			103	97	51
Morrow			93	70	48
Muskingum	88	78	102	98	61
Noble			105	80	80
Ottawa	80	65	75	65	70
Paulding			97	90	52
Perry			92	.....	35
Pickaway	70	75	101	.....	42
Pike	80	80	104	100	90
Portage			98	95	30
Preble	88	68	77	.....	80
Putnam			105	75	15
Richland			90	.....	37
Ross	80	65	76	70	70
Sandusky			83	100	25
Scioto			102	.....	.....
Seneca	100	90	90	85	36
Shelby	100	91	96	98	14
Stark	75	81	90	79	53
Summit			90	65	37
Trumbull			92	90	58
Tuscarawas	90	94	95	70	42
Union			101	50	25
Van Wert	75	75	93	70	47
Vinton			96	70	90
Warren	95	93	99	60	91
Washington			104	70	34
Wayne	100	100	96	88	50
Williams			85	100	40
Wood	80	70	98	80	35
Wyandot	65	47	74	77	44
Average per cent	86	77	95	80	47

CONDITION OF CROPS AND LIVE STOCK, ETC.—Continued.

Counties.	Potatoes.		Apples.	Hogs.		Commer- cial fertil- izers.
	Average product per acre—Bushels.	Affected by rot—Per cent.	Product compared with full average— Per cent.	Condition compared with full average— Per cent.	To be fattened com- pared with last year —Per cent.	Farmers using on wheat crop—Per cent.
Adams	93	1	76	95	82	56
Allen	78	6	43	90	61	1
Ashland	110	7	25	92	70	22
Ashtabula	84	3	56	96	87	77
Athens	128	3	40	100	100	60
Auglaize	116	2	66	86	84	.....
Belmont	128	5	25	93	95	14
Brown	93	.....	76	95	82	56
Butler	120	3	95	93	77	4
Carroll	109	2	16	99	88	55
Champaign	130	1	38	100	80	3
Clark	89	2	48	75	84	9
Clermont	76	1	100	94	86	39
Clinton	85	2	92	88	75	30
Columbiana	131	9	89	90	90	49
Coshocton	100	9	84	88	84	18
Crawford	87	1	10	84	91	28
Cuyahoga	90	5	15	80	71	83
Darke	100	1	73	83	76	7
Defiance	120	6	56	99	84	.....
Delaware	110	3	5	97	71	32
Erie	96	3	19	68	98	9
Fairfield	114	6	67	90	92	23
Fayette	150	5	78	88	88	2
Franklin	94	4	17	88	82	20
Fulton	125	3	55	93	83	3
Gallia	180	3	95	93	86	51
Geauga	83	5	45	96	93	82
Greene	107	1	94	82	79	9
Guernsey	140	2	53	89	77	71
Hamilton	112	.....	90	95	95	7
Hancock	130	2	21	93	88	2
Hardin	80	2	23	91	84	1
Harrison	105	6	24	93	86	22
Henry	120	3	25	84	65	3
Highland	120	7	88	92	95	80
Hocking	92	7	48	95	92	85
Holmes	103	2	52	97	98	12
Huron	99	2	12	90	78	58
Jackson	98	5	66	93	93	80
Jefferson	140	2	32	90	96	63
Knox	100	1	10	98	72	56
Lake	78	1	30	90	82	50
Lawrence	118	5	65	94	89	19
Licking	121	5	18	96	88	54
Logan	95	.....	26	79	79	4
Lorain	80	6	10	87	82	60

CONDITION OF CROPS AND LIVE STOCK, ETC.—Concluded.

Counties.	Potatoes.		Apples.	Hogs.		Commer- cial fertil- izer.
	Average product per acre—Bushels.	Affected by rot—Per cent.	Product compared with full average— Per cent.	Condition compared with full average— Per cent.	To be fattened com- pared with last year Per cent.	Farmers using on wheat crop—Per cent.
Lucas	128	3	29	84	80	5
Madison	83	2	15	89	82	1
Mahoning	108	5	35	98	93	61
Marion	110	3	11	90	84	2
Medina	120	3	17	98	86	85
Meigs	93	4	68	87	85	73
Mercer	90	.....	84	100	75	5
Miami	125	1	36	100	83	14
Monroe	140	6	31	98	98	40
Montgomery	125	1	90	90	95	28
Morgan	97	3	30	90	80	70
Morrow	78	6	10	91	87	21
Muskingum	90	3	22	93	85	62
Noble	115	4	25	94	91	44
Ottawa	85	.....	70	73	95	30
Paulding	135	.....	40	93	88	10
Perry	120	.....	20	100	75	70
Pickaway	115	3	61	90	80	9
Pike	105	6	92	100	94	52
Portage	117	6	13	87	76	69
Preble	96	2	61	84	40	70
Putnam	150	.....	37	100	70	.....
Richland	90	.....	25	87	85	80
Ross	106	4	84	92	76	18
Sandusky	130	1	15	93	80	2
Scioto	98	3	80	94	80	26
Seneca	112	2	10	93	80	60
Shelby	90	.....	84	100	75	5
Stark	104	4	17	100	72	30
Summit	100	3	17	93	97	40
Trumbull	90	3	32	95	82	90
Tuscarawas	106	3	30	84	85	23
Union	94	2	34	84	91	4
Van Wert	100	2	73	84	75	6
Vinton	93	3	61	100	91	63
Warren	105	.....	100	90	90	60
Washington	97	3	36	97	84	61
Wayne	98	3	30	98	98	64
Williams	80	.....	50	90	75	22
Wood	120	.....	22	92	84	1
Wyandot	96	1	10	72	82	4
Average per cent ..	99	3	45	91	83	35

CROP AND STOCK REPORT FOR DECEMBER 1, 1891.

The following estimated averages for the state are figured from the returns of the regular township crop correspondents of the State:

Wheat—Condition of growing plant compared with a full average.....	75 per cent.
“ Crop of 1891 sold as soon as threshed	43 “
“ Damage to growing crop by Hessian fly	5 “
“ Damage to growing crop by white grub worm	2 “
Corn—Average yield per acre	33 bushels.
“ Crop of 1891 cut up for fodder.....	83 per cent.
“ Crop of 1891 put in silo	12 “
“ Date of cutting for fodder.....	September 25.
“ Date of cribbing.....	October 25.
Clover seed—Yield compared with a full average.....	85 per cent.
Apples—Product compared with a full average... ..	45 “
Potatoes—Average yield per acre	98 bushels.
Cattle—Fed for spring market compared with last year.....	82 per cent.
Sheep—Fed for mutton compared with last year.....	85 “

The condition of growing wheat is not flattering, the plant being short and weak. Much of the late seeded is very feeble and thin on the ground. The condition is even less than estimated last month, and falls twenty-five per cent. short of a full average condition. Damage by Hessian fly is reported in sixty-nine counties of the State, and by the white grub worm in twenty-three counties.

The estimate of the corn crop made November 1, by percentage comparison on the whole, placed the average product per acre at between thirty-two and thirty-three bushels per acre. The present estimate from returns of bushels per acre makes an average for the State of about thirty-three bushels per acre, and upon this basis the total crop is a fair one, though in the record for the past twenty years there have been eleven larger corn crops, eight of which were over one hundred million bushels. The crop of 1890 was an exceptionally short one, and the crop of this year exceeds it by about 23,000,000 million bushels.

The present estimate of the potato crop is about the same as that made November 1, viz., 12,000,000 bushels, an increase over the crop of 1890 of 7,000,000 bushels.

SECOND ANNUAL REPORT
OF
FARMERS' INSTITUTES,
HELD IN 1891-92,
BY THE
OHIO STATE BOARD OF AGRICULTURE,
UNDER THE ACT PASSED APRIL 26, 1890.

SECOND ANNUAL REPORT
OF
FARMERS' INSTITUTES,
HELD IN 1891 AND 1892,
BY THE
OHIO STATE BOARD OF AGRICULTURE,
UNDER THE ACT PASSED APRIL 26, 1890.

The institute work in Ohio for the past season has been encouraging. The attendance has been larger, more requests for institutes have been filed than ever before, and the work done, shows an improvement on the past.

The policy of the State Board of Agriculture leaves the local societies free to arrange their programs, and elect their own officers. It has uniformly encouraged bringing out home talent and participation in discussion. As a rule, we find the people appreciate the efforts of the Board in this direction, and have cheerfully and successfully borne their part in furnishing well-prepared and practical papers, and occupying a large part of the time in their discussion. They have thus acquired strength in a new line of work, and in many counties the interest in the work has led to permanent organizations, and holding from two to three institutes during the year, trusting wholly to their own efforts. Reports of these meetings show that they are well attended and profitable.

We are sometimes embarrassed by the number of petitions from one county. Where the quota of the Board of Agriculture is not quite enough to meet the expense of sending speakers to two institutes, it is clear the Board can not agree to send speakers to more than two institutes in such counties. The cost to the Board of Agriculture per institute is greater than the cost per institute to the County Societies, yet the amount available for the Board of Agriculture is less than that available to the County Societies.

The amount available from three mills per capita, for County Institute Societies, is \$7,578.61. The amount reported to the State Board of

Agriculture, as expended at 141 institutes, by the local societies, is \$4,126.29, which leaves \$3,452.32 of the available fund unexpended.

The State Board of Agriculture expended \$5,171.30 on 141 institutes, reports, etc., while the total sum received from the counties under the two-mill assessment, is \$4,971.69 plus \$83.09 delinquent last year, and \$10 from other sources, making the State Board's total receipts for the year \$5,064.78. Thus the Board of Agriculture has expended \$106.52 more than was received from the counties.

This sum was drawn from other funds. In view of this state of things it is evident that the State Board can not increase the number of institutes, unless the law is so changed as to make available the balance unexpended by the County Societies.

If the law were changed so as to give two and one-half mills to the County Societies and two and one-half mills to the State Board of Agriculture, there would be available an equal amount for the County Societies and the State Board, namely, \$6,275.15.

The County Societies would then have \$2,148.86 more to expend than they expended last year on 141 institutes, and the State Board would have \$1,103.85 more than last year, and could grant about twenty more institutes; that is to say, could hold about 161 institutes instead of 141 institutes. Until such change in the law is made we have reached the limit of the number of institutes which can be granted.

In this connection it is well to note that we have on file at this date (May 1) applications for 142 institutes the coming year, and petitions are still coming in. When we remember that in 1881 there were 46 institutes held under the appropriation of \$1,000 made by the State Board of Agriculture out of the earnings of the State Fair, and for several succeeding years appropriated for aid of institutes, it is evident that the State Fair has proved a prominent educational factor in the State and deserves well from the farming community and all others interested in the education and development of our people.

The institute work is not complete. It has yet many defects. Still it is improving, and the people are manifesting their interest in and approval of the work, as is seen in the increased attendance and demand for institutes.

Where petitions have been filed and the Board could not, for want of funds, grant the request of petitioners, they have been encouraged to organize and prepare to hold independent institutes, trusting to home talent and volunteer speakers.

In many cases the secretary has invited speakers to assist him or go to the aid of such independent societies. We are happy to report that

in every case such institutes have been well attended, interesting and have resulted in great good.

Those who have read papers or taken part in discussions have made real advancement and are stronger to grapple with the many problems of life.

It is possible and desirable that a greater number of independent institutes be held.

In counties where there are petitions filed for more institutes than the Board of Agriculture can grant, the interests of all will be served if the societies will proceed to hold independent institutes and every farmer and his family attend all within their reach.

The institutes of Ohio have been conducted on the theory that the greatest good comes to those who take part and help themselves.

The true idea of education is to *draw out* and induce inquiry and discussion.

The *pouring on* process may entertain but never can be so instructive or quickening as where all take part and feel an individual responsibility in the success of an institute. It is on this theory that speakers sent out by the Board of Agriculture are expected not to occupy more than half the time, leaving the other half for discussion and practical papers by local talent.

Our repeated request that the local committees should seek to *instruct* rather than to *amuse*, has been followed by marked improvement and as a rule the work at institutes has been earnest, practical, instructive and interesting.

So long as it is impossible for the Board of Agriculture to grant every petition sent in for an institute, it will be necessary for petitioners to give the Board credit for doing the best it can under the circumstances. Its aim will be to reach the greatest number and to best accommodate the tax payers of the county.

It is clearly unwise to change from a locality where the attendance is large, and interest unflagging to one where the attendance will be small, and interest no better. As a rule, it will not be wise to attempt to accommodate an audience of five hundred in a hall, which will not seat half that number. The questions of attendance, capacity of hall, and reported and estimated cost, must all be considered before appointments are made. On the other hand it is not wise to neglect the petitions from other less favored localities. Since some of the stronger societies may properly be left to go alone, while help should be extended to less favored communities.

The policy of the Board is to encourage all to do what they can for self-improvement, and to extend aid where it will be most effective.

We take this occasion to gratefully acknowledge the generous and valuable assistance given by the Presidents and Professors of the State Universities, and by the Director of the Agricultural Experiment Station and his assistants. Their labors have been scholarly and practical, and have been a tax on their time and strength, and given without charge, and in the true missionary spirit.

The thanks of the people are due to many enterprising and faithful officers of institutes who perform their duties with the true public spirit, which characterizes the good citizen. The success of the institute work depends more upon this unselfish desire for the improvement of our families and neighborhood than upon the funds available under the institute law.

L. N. BONHAM,
Secretary.

AN ACT

TO PROVIDE FOR THE ORGANIZATION AND SUPPORT OF FARMERS' INSTITUTE SOCIETIES.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That when twenty or more persons, residents of any county in the state, organize themselves into a society, to be called _____ farmers' institute, for the purpose of teaching better methods of farming, stock raising, fruit culture, and all the branches of business connected with the industry of agriculture, and adopt a constitution and by-laws agreeably to rules and regulations furnished by the state board of agriculture; and when such society shall have elected proper officers and performed such other acts as may be required by the rules of the state board of agriculture, such society is deemed a body corporate.*

SEC. 2. Not to exceed three farmers' institute societies may be organized under the provisions of this act in any one county in the state, and provided the state board of agriculture shall have the power to determine the number and name the time and place for holding each institute.

SEC. 3. When societies have organized under the provisions of this act, and have held an annual public farmers' institute meeting, in accordance with the rules of the state board of agriculture, the secretary of said board shall issue certificates, one to the president of the farmers' institute society and one to the president of the state board of agriculture, setting forth these facts, and, on the presentation of these certificates to the county auditor, he shall, each year, draw orders on the treasurer of the county as follows: based on the last previous census, but in no county shall the total sum exceed two hundred dollars, and the treasurer of the county shall pay the same. A sum equal to two mills for each inhabitant of the county, in favor of the president of the state board of agriculture, and a sum equal to three mills for each inhabitant of the county, in favor of the president of the farmers' institute society, except in counties where there are more than one farmers' institute society organized under the provisions of this act; the said three mills for each inhabitant shall be equally apportioned among such societies, and warrants in the proper amounts issued to the respective presidents; and provided further, that the payment to any institute society shall not exceed the expense, as per detailed statement, provided in section four of this act.

SEC. 4. With the presentation of the certificate of the secretary of the Ohio state board of agriculture, each year, to the county auditor, which certificate shall indicate the number of societies organized in the county, and before the auditor issues his order upon the treasurer, there shall be filed with the auditor a verified detailed exhibit of the receipts and expenditures of the institute for the current year, no part of which shall be or include salaries for officers of the institute society; but this provision shall not apply to the order (to the order) in favor of the president of the state board of agriculture, which board shall issue statement, as required in section six of this act.

SEC. 5. At each of the annual farmers' institute meetings, held under the provisions of this act, the state board of agriculture shall furnish at least two lecturers or speakers whose compensation and expenses shall be paid by said board.

SEC. 6. At the close of each session's work, the state board of agriculture shall publish in pamphlet or book form, such lectures and papers delivered at the several institutes as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state, copies of which shall be furnished the secretary of each institute society, and the balance issued to be for general distribution; the cost of preparing the matter and the distribution of the pamphlet or book to be paid by the state board of agriculture. Said board shall also publish, in such pamphlet or book, a detailed statement of its receipts under the provisions of this act and the disbursements on account of institute work.

SEC. 7. Where five or more farmers' clubs and granges have already organized for the purpose of holding farmers' institutes annually, and elected officers, adopted a constitution and by-laws, such organization shall be considered as a legal organization, provided their constitution and by-laws shall be approved by the state board of agriculture.

SEC. 8. This act shall take effect and be in force from and after its passage.

NIAL R. HYSELL,

Speaker of the House of Representatives.

WILLIAM V. MARQUIS,

President of the Senate.

Passed April 26, 1890.

RULES

OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE ORGANIZATION AND MANAGEMENT OF FARMERS' INSTITUTE SOCIETIES.

ARTICLE 1. Counties or localities desiring to organize Farmers' Institute societies in accordance with the act of the General Assembly of Ohio, passed April 26, 1890, must first present a petition to the State Board of Agriculture for the same, signed by twenty or more residents of the county, without regard to sex, except that signers shall be of legal age. In order that the Board may more intelligently act on such petitions, the petitioners shall furnish replies to queries propounded by the State Board of Agriculture, concerning location of Institute, capacity of hall or place of meeting, road and railway facilities, number of Institute societies contemplating organization in the county, etc. Blank petitions with the queries to be answered, will be furnished on application to the Secretary of the State Board of Agriculture, at Columbus.

ART. 2. Said petition and answer should be filed with the State Board of Agriculture not later than September 1, of any year. Earlier presentations will greatly facilitate the work of the Board in considering applications and assigning dates and

speakers. Petitioners will be promptly notified of the action of the State Board on their petitions.

ART. 8. After petitions for institute societies have been granted, the petitioners will proceed to organize, by the election of a president, vice president, secretary, treasurer, executive committee of five (the president and secretary to be two of the five), and such other officers as they may desire, to awaken interest and secure efficiency in the institute work. After the final organization, the annual election of officers shall be held during the annual institute meeting, only members of the society being entitled to vote. Of the officers, not more than two shall be selected who are residents of the same township or members of the Grange, Alliance or Farmers' Clubs. The society shall adopt a constitution and by-laws in harmony with the State law and these rules.

ART. 4. As soon as the organization is completed, it shall be reported to the secretary of the State Board of Agriculture, with the name of the society, and the name and P. O. address of each officer; a copy of the constitution and by-laws shall also be furnished him.

ART. 5. The secretary of each institute society shall keep, in a substantial book or books, a record of all meetings of the executive committee and society, and a roll of the members with the P. O. address of each. First, the original petitioners for the organization, followed by residents of the county, of legal age, who, by enrolling their names in the secretary's book, become members of the society.

ART. 6. When societies are notified of the date assigned for their institute and the lecturers to be furnished by the State Board of Agriculture, the executive committee shall proceed, in due time, to complete the arrangements for their institute, by engaging hall, selecting the local talent desired, arranging for music, etc., preparing a program, which shall occupy fully the time assigned for the institute meeting. In arranging the program, time shall be allowed for discussion of the topics presented and for miscellaneous questions. The speakers sent by the Board of Agriculture are to occupy not more than half the time of the institute, and local talent, discussions and music the remaining time. The program is to be published for general distribution at least two weeks in advance of the institute, and at the same time a copy mailed to the secretary of the State Board of Agriculture and to each of the speakers who are to take part. Should anything occur to make it necessary to change the date of or abandon the meeting of the institute, notice of same shall be sent, without delay, to each speaker and to the Secretary of the State Board of Agriculture. Societies shall thoroughly advertise and use diligence and enterprise to create an interest among the people and secure the largest possible attendance. Every citizen of the county ought to be informed as to the time, place and nature of the institute.

ART. 7. All institute societies organized under the act shall be strictly non-partisan and non-sectarian in every phase of their work, and no institute shall be operated in the direct interest of any party, Grange, Alliance, Farmers' Club, sect or society, but for the equal good of all citizens and farming communities.

ART. 8. No subject shall be presented at the institute meeting or discussion allowed, of a political or sectarian nature; nor shall any speaker be allowed, in his lecture, essay or speech, or in any discussion to advertise wares or schemes in which he has a direct or indirect pecuniary interest. The officers of the institute shall see that the exercises are not subordinated to any low or frivolous entertainments or to the aggrandizement of any individual, party or sect.

ART. 9. No fee shall be charged for admission to the institutes. They shall be public and free to all, the object being to impart agricultural knowledge and experience free to all persons sufficiently interested to attend. This rule shall apply only to the regular annual meeting. If the society desires to hold quarterly, monthly or weekly meetings during the year, the expense of same may be met by admittance

fees, subscriptions, collections or sale of season tickets. Nothing in this section shall prevent voluntary contribution or subscription for securing speakers desired, other than those sent by the State Board of Agriculture.

ART. 10. Within ten days after the close of each institute, the secretary shall make a report to the secretary of the State Board of Agriculture, blanks for which will be furnished. On receipt of such report by the secretary of the State Board, he will issue the certificate according to law, which will enable the society to draw the amount due from the county.

ART. 11. Societies or their executive committee may, on the call of the president, hold such business meetings, other than the regular annual institutes, as may be necessary to transact the business of the society and arrange for the institutes; and their traveling expenses for such meetings may be paid as other itemized expenses of the institute.

ART. 12. The continuance of an institute in any locality in a county will depend on its success and general approval by citizens of the county, as expressed to the State Board of Agriculture.

ART. 13. Within ten days after the close of the institute, the secretary shall send a written report to the secretary of the State Board of Agriculture, stating the cost of the institute, not including expense of speakers sent by the Board of Agriculture; number in attendance during the institute; speakers absent; speakers who filled appointments; state whether speaker or speakers were acceptable or otherwise, and report any new feature or matter of special interest.

ART. 14. Before the close of an institute a vote shall be taken on the question of holding an institute the next year. Report the result of this vote, giving number in favor and number opposed, and name the time preferred and why, as no speakers will be assigned by the Board of Agriculture until informed on these points.

SUGGESTION.

To save time and yet secure a fair expression of the wish of the membership, it is recommended that, at the close of the first session of the institute, the president appoint a committee of five to present names of candidates for the several offices, and, unless other candidates are nominated by some member of the society, the secretary on a motion and a *viva voce* vote, may be instructed to cast the vote of the society for the candidates, in order as named by the committee on nomination. This will save much time and insure a wiser selection of officers than can be secured by promiscuous nominations.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes for the season of 1891 and 1892, held under the law of April 26, 1890:

RECEIPTS.

Amounts collected from the counties on the basis of two mills per capita, but not exceeding \$80 in any county, this amount per capita to the limit of \$80, being the State Board's proportion of the total five mills, but not exceeding \$200, provided under the law for the maintenance and support of County Institute Societies in Ohio.

From Adams county.....	\$52 18
Allen "	80 00
Ashland "	44 44
Ashtabula county	80 00
Athens "	70 88
Auglaize "	56 20
Belmont "	80 00
Brown "	59 78
Butler "	80 00
Carroll "	85 04
Champaign "	53 96
Clark "	80 00
Clermont "	67 10
Clinton "	48 48
Columbiana "	80 00
Coshocton "	53 86
Cuyahoga "	80 00
Darke "	80 00
Defiance "	51 52
Delaware "	54 36
Erie "	70 92
Franklin "	80 00
Fulton "	44 04
Gallia "	54 00
Geauga "	28 96
Green "	59 64
Guernsey "	57 20
Hamilton "	80 00
Hancock "	80 00
Harrison "	41 66
Henry "	50 16
Highland "	58 08
Hocking "	45 30
Holmes "	42 26
Huron "	68 88
Jackson "	78 82
Knox "	55 20
Lake "	86 46
Lawrence "	79 10

FARMERS' INSTITUTES.

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Licking	"	\$80 00
Logan	"	54 76
Lorain	"	80 00
Lucas	"	80 00
Madison	"	40 11
Mahoning	"	80 00
Marion	"	.....	49 44
Medina	"	.....	43 48
Meigs	"	.....	59 82
Mercer	"	.....	54 44
Miami	"	.....	79 50
Monroe	"	.....	50 35
Montgomery county		.....	80 00
Morgan county		.....	88 28
Morrow	"	.....	36 24
Muskingum county		.....	80 00
Noble county		.....	41 50
Ottawa	"	.....	43 94
Paulding county		.....	51 88
Perry	"	.....	62 30
Pickaway	"	.....	58 90
Pike	"	.....	84 96
Portage	"	.....	55 72
Preble	"	.....	46 84
Putnam	"	.....	60 86
Richland	"	.....	76 14
Ross	"	.....	78 90
Sandusky	"	.....	61 22
Scioto	"	.....	70 74
Seneca	"	.....	80 00
Shelby	"	.....	49 40
Stark	"	.....	80 00
Summit	"	.....	80 00
Trumbull	"	.....	80 00
Union	"	.....	45 72
Van Wert	"	.....	59 84
Warren	"	.....	50 92
Washington county		.....	80 00
Wayne county		.....	78 01
Williams county		.....	49 78
Wood	"	.....	80 00
Wyandot	"	.....	43 44
Total			\$4,971 69
Lawrence county, payment with interest for last year			83 09
Returned by Alva Agee, lecturer.....			10 00
Total during year			<u>\$5,064 78</u>

DISBURSEMENTS

For per diem and expense of lecturers as follows:

1891.		
December	7, F. A. Derthick, Mantua, O	\$17 40
"	10, W. I. Chamberlain, Hudson, O	114 15
"	10, A. E. McKelvey, St. Clairsville, O	80 00
"	11, W. N. Cowden, Quaker City, O.....	84 15
"	15, F. A. Derthick, Mantua, O	77 25
"	15, Geo. E. Rice, Warren, O.....	81 45
"	18, W. N. Cowden, Quaker City, O.....	84 55
"	19, Waldo F. Brown, Oxford, O	160 85
"	21, S. H. Hurst, Chillicothe, O.....	42 75
"	28, J. F. Hickman, Columbus, O.....	16 40
"	28, S. H. Todd, Wakeman, O.....	124 90
"	29, B. F. Albaugh, Covington, O.....	50 90
1892.		
January	1, Waldo F. Brown, Oxford, O	40 28
"	2, W. I. Chamberlain, Hudson, O	145 00
"	6, W. H. Scott, Columbus, O	5 18
"	6, W. W. Farnsworth, Waterville, O.....	16 85
"	8, W. H. Gilbert, Richland, N. Y.....	126 17
"	5, D. L. Kellicott, Columbus, O	6 25
"	7, F. M. Webster, Columbus, O.....	4 40
"	11, O. J. Vine, Canton, O.....	14 45
"	11, T. B. Terry, Hudson, O	258 45
"	12, Waldo F. Brown, Oxford, O	110 50
"	20, W. H. Gilbert, Richland, N. Y.....	147 86
"	20, B. F. Albaugh, Covington, O.....	16 70
"	20, Alfred Shirer, Dayton, O.....	88 80
"	23, F. A. Derthick, Mantua, O.....	52 65
"	28, J. Fremont Hickman, Columbus, O.....	46 00
"	28, D. L. Kellicott, Columbus, O.....	12 55
"	28, Wm. R. Lazenby, Columbus, O	44 60
"	28, Sam'l Johnson, Lansing, Mich.....	97 18
"	29, W. I. Chamberlain, Hudson, O.....	221 87
"	30, A. T. McKelvey, St. Clairsville, O.....	50 00
February	2, S. H. Todd, Wakeman, O.....	74 88
"	3, T. B. Terry, Hudson, O.....	218 70
"	5, Geo. E. Rice, Warren, O.....	9 75
"	9, W. N. Cowden, Quaker City, O.....	37 05
"	9, W. H. Gilbert, Richland, N. Y.....	127 66
"	11, C. E. Thorne, Columbus, O.....	23 54
"	16, F. A. Derthick, Mantua, O.....	62 05
"	16, D. L. Kellicott, Columbus, O.....	5 55
"	16, Alfred Shirer, Dayton, O	59 00
"	19, F. M. Webster, Columbus, O.....	11 40
"	19, W. N. Cowden, Quaker City, O.....	38 85
"	19, E. C. Ellis, Creston, O.....	42 00
"	20, Abner L. Frazer, Mulberry, O.....	40 50
"	23, W. I. Chamberlain, Hudson, O.....	169 05
"	24, W. A. Kellerman, Columbus, O.....	13 50
"	25, A. T. McKelvey, St. Clairsville, O.....	25 00
"	25, S. H. Hurst, Chillicothe, O.....	95 65

February	25, Joshua Crawford, Galion, O.....	\$47 60
"	29, W. R. Parsons, Worthington, O	18 15
"	29, W. H. Scott, Columbus, O.....	14 95
"	29, E. C. Ellis, Creston, O.....	23 80
"	29, Waldo F. Brown, Oxford, O.....	825 80
"	29, W. O. Thompson, Oxford, O.....	52 85
"	29, Jas. Chalmers, Columbus, O.....	83 18
March	2, J. F. Hickman, Columbus, O.....	80 01
"	2, J. H. Brigham, Delta, O.....	85 80
"	5, W. J. Green, Columbus, O.....	45 12
"	5, L. N. Bonham, Columbus, O.....	7 95
"	7, H. A. Weber, Columbus, O.....	9 15
"	8, Wm. R. Lezenby, Columbus, O.....	28 20
"	8, S. H. Todd, Wakeman, O.....	195 50
"	9, A. T. McKelvey, St. Clairsville, O.....	73 60
"	9, T. B. Terry, Hudson, O.....	272 75
"	19, Alva Agee, Cheshire, O.....	69 70
		<hr/> <hr/>

MISCELLANEOUS.

1891.		
October	15, Postage for institute reports.....	\$184 00
1892.		
January	15, J. T. Ward, janitor and expense annual meetings.....	10 00
February	4, P. Hayden & Co., collections.....	2 05
"	4, A. U. Armstrong, stenographic report.....	66 80
"	8, Freight and drayage, reports to institutes	16 90
"	10, Postage for reports, etc.....	330 00
March	15, P. Hayden & Co., collections	1 85
Total		<hr/> <hr/> \$5,171 80

RECAPITULATION AND SPECIFIC DIVISION OF EXPENDITURES.

1.	Amount allowed to 141 county societies from three mills per capita of population.....	\$7,578 61
2.	Amount allowable to State Board of Agriculture from two mills per capita of population from the counties in which institutes were held during season of 1892.....	4,971 69
3.	Amount collected from counties by State Board of Agriculture for institutes of 1892.....	4,971 69
4.	Expended by institute societies for 141 institutes.....	4,126 29
5.	Expended by State Board of Agriculture.....	5,171 80
6.	Total expense for 141 institutes	9,297 59
7.	Total average expense per institute.....	65 94
8.	Average expenditure per institute by societies.....	29 26
9.	Average expenditure per institute by State Board of Agriculture	36 69
10.	Average number of persons in attendance at institutes.....	409
11.	Total average expense per capita for each person attending five sessions of institute.....	16 1/2 cts.

COUNTY FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON OF 1891 AND 1892, BEGINNING NOVEMBER 30, 1891, ENDING MARCH 5, 1892.

County	Population	Petitions for organization received from—	Petitions granted and institutes held at—	Time granted	Attendance reported	Secretary	Post-office	Amount from county funds allowable to local society	Reported expense to local society
Adams	26,068	West Union.....	West Union.....	Feb. 17-18.....	220	Sam. E. Davidson.....	West Union.....	\$78 28	\$88 78
Allen	40,644	Eckmansville.....	Lima.....	Dec. 2-3.....	35	W. M. Pettinger.....	Eckmansville.....	60 00	26 20
Ashtabula	22,228	Birton.....	Birton.....	Dec. 4-5.....	550	J. H. Binkley.....	Herring.....	60 00	26 00
Ashland	43,666	Polk.....	Polk.....	" 21-22.....	650	J. J. Schanblin.....	Polk.....	68 66	30 00
Athens	35,194	Jefferson.....	Jefferson.....	Feb. 3-4.....	800	Benj. Mitchelson.....	Jefferson.....	60 00	26 06
		Ashabula.....	Ashabula.....	Jan. 29-30.....	450	H. J. Warner.....	Ashabula.....	60 00	43 31
		Athens.....	Athens.....	Feb. 17-18.....	500	A. Pickett.....	Athens.....	52 79	31 08
		Nelsonville.....	Nelsonville.....	" 18-19.....	150	S. F. Beverage.....	Nelsonville.....	52 79	30 50
Auglaize	23,100	Amesville.....	Amesville.....	Nov. 30; Dec. 1.....	125	J. E. Boyles.....	Amesville.....	42 15	12 20
Belmont	57,413	Ruckland.....	Ruckland.....	Feb. 8-1.....	150	T. E. Bowler.....	Ruckland.....	42 15	32 15
Brown	29,899	Uniolepolis.....	Uniolepolis.....	Jan. 20-21.....	550	Frank Rigdon.....	Uniolepolis.....	60 00	27 10
Butler	43,597	Barnevillle.....	Barnevillle.....	" 6-7.....	100	D. G. Bundy.....	Iacoma.....	60 00	59 76
		Martin's Ferry.....	Martin's Ferry.....	Feb. 15-16.....	300	J. A. Blackford.....	Bridgeport.....	44 84	69 86
		Georgetown.....	Georgetown.....	Jan. 21-22.....	450	W. H. Wilson.....	Georgetown.....	41 84	8 95
		R-d Oak.....	R-d Oak.....	Feb. 8-9.....	250	J. L. Devore.....	R-d Oak.....	60 00	29 23
		New London.....	Venice.....	Jan. 11-12.....	550	John A. Butterfield.....	Rosa.....	52 69	30 00
		Monroe.....	Monroe.....	Jan. 15-16.....	350	Geo. W. Bender.....	Collinsville.....	40 47	40 00
Carroll	17,566	Carrollton.....	Carrollton.....	Dec. 22-24.....	350	C. L. Young.....	Carrollton.....	40 47	10 00
Champaign	24,980	Mechanicsburg.....	Mechanicsburg.....	Jan. 20-21.....	400	T. K. Burnham.....	Mechanicsburg.....	60 00	24 40
Clark	52,277	Cable.....	Cable.....	Jan. 25-26.....	425	Ora Gerrard.....	Urbana.....	60 00	29 90
		Springfield.....	Springfield.....	Dec. 14-15.....	600	Sam. J. Wiltemon.....	Springfield.....	50 32	27 40
		Williamsburg.....	Williamsburg.....	Feb. 8-9.....	800	Benton Clemens.....	Monterey.....	50 32	53 26
Clermont	32,138	Williamsburg.....	Williamsburg.....	" 12-13.....	700	Fred. L. Mirkel.....	Mt. Rose.....	36 86	16 50
Clinton	24,240	Mulberry.....	Wilmington.....	Dec. 18-19.....	800	John B. Peelle.....	Bloomington.....	36 86	7 96
Columbiana	59,029	Sabina.....	Sabina.....	Jan. 1-2.....	550	Mollie T. Rummell.....	Meek.....	60 00	16 00
Coshocton	26,708	Signal.....	Signal.....	Dec. 11-12.....	550	F. E. Eterly.....	Leontia.....	60 00	27 60
		Warsaw.....	Warsaw.....	Jan. 11-12.....	400	W. D. Kistler.....	Warsaw.....	40 06	16 87
		Plainfield.....	Plainfield.....	Jan. 11-12.....	400	John A. Forney.....	Plainfield.....	40 06	22 26

Cayahoga.....	309,970	Strongsville.....	Dec. 18-19.....	325	H. W. Merrick.....	Strongsville.....	60 00	28 24
Dart.....	42,861	Euclid.....	Feb. 1-2.....	650	W. H. Dille.....	Euclid.....	60 00	65 61
Dedance.....	25,769	Greenville.....	Jan. 15-16.....	330	L. E. Jones.....	Greenville.....	120 00	42 60
Delaware.....	27,189	Defiance.....	Feb. 22-23.....	450	C. T. Detrick.....	Defiance.....	38 65	29 60
Eric.....	35,463	Hicksville.....	" 29, March 1.....	460	N. B. Hall.....	Hicksville.....	78 65	18 00
Franklin.....	124,087	Olive Green.....	Dec. 21-22.....	450	A. G. Phillips.....	Pageton.....	40 78	30 00
Fulton.....	22,028	Delaware.....	Feb. 22-23.....	450	E. G. Taggart.....	Levia Centre.....	78 25	25 60
Galla.....	27,005	Sandusky.....	Jan. 15-16.....	1,200	D. D. White.....	Catala.....	106 88	88 54
Geauga.....	13,489	Berlin Heights.....	Dec. 14-15.....	325	C. H. Vance.....	Blendon.....	60 00	28 80
Greene.....	29,820	Canal Winchester.....	Feb. 17-18.....	700	R. J. Tuning.....	Canal Winchester.....	60 00	28 08
Guernsey.....	28,854	Wauseon.....	Jan. 6-7.....	850	L. G. Ely.....	West Unity.....	38 08	16 07
Hamilton.....	874,573	Della.....	March 4-5.....	600	Alva Agee.....	Cheshire.....	83 63	12 71
Karcock.....	42,553	Gallipolis.....	Dec. 2-3.....	150	J. C. Doolittle.....	Burton.....	81 01	11 68
Harrison.....	20,880	Burton.....	Jan. 27-28.....	510	R. B. Vandervort.....	Jamestown.....	40 46	29 75
Henry.....	25,080	Jamestown.....	Dec. 11-12.....	800	Jas. A. Crawford.....	Xenia.....	44 73	28 25
Highland.....	29,048	Xenia.....	Feb. 17-18.....	800	Ell Keenan.....	Quaker City.....	44 73	87 00
Hocking.....	22,853	Quaker City.....	Jan. 22-23.....	950	A. G. Buckingham.....	Camp Dennison.....	84 05	61 08
Holmes.....	21,139	Harrison.....	Feb. 10-11.....	550	Robert Cary.....	Harrison.....	60 00	30 46
Huron.....	31,949	Glendale.....	" 10-11.....	250	Geo. W. Raymond.....	Springdale.....	60 00	48 00
Jefferson.....	39,415	Mt. Blanchard.....	Jan. 18-19.....	330	H. Lackey.....	Mt. Blanchard.....	60 00	28 00
Knox.....	27,000	Benton Ridge.....	Dec. 7-8.....	200	Elmer Harpst.....	Benton Ridge.....	60 10	31 25
Lake.....	18,225	Freepport.....	Jan. 18-19.....	400	J. F. McMath.....	Freepport.....	31 24	30 00
Lawrence.....	39,556	Cadiz.....	Feb. 10-11.....	900	E. B. McNamee.....	Cadiz.....	31 24	30 00
Licking.....	43,275	Napoleon.....	" 21-25.....	500	J. C. Davis.....	Napoleon.....	37 62	39 62
Legan.....	27,886	Holgate.....	Jan. 15-16.....	400	John McMullen.....	Bainaboro.....	37 62	7 50
Lewis.....	40,295	Reinsboro.....	Feb. 10-11.....	450	Wm. N. England.....	Logan.....	67 97	38 25
Loos.....	102,296	Hillsboro.....	Feb. 15-16.....	500	J. G. Biderback.....	Millersburg.....	31 70	19 75
		Logan.....	Jan. 8-9.....	850	W. F. Garver.....	Killbuck.....	31 70	18 65
		Millersburg.....	Dec. 9-10.....	450	D. O. Faye.....	Greenwich.....	47 92	15 98
		Killbuck.....	" 21-22.....	200	Geo. Barqas.....	Collins.....	47 92	28 30
		Greenwich.....	Feb. 3-4.....	500	Sherrill Floyd.....	Paris.....	59 12	51 35
		Townsend.....	Jan. 4-5.....	450	Geo. E. Scott.....	Mt. Pleasant.....	59 12	60 00
		Winterville.....	" 8-9.....	400	Wm. F. Carr.....	Smithfield.....	41 40	55 20
		Mt. Pleasant.....	Feb. 5-6.....	900	D. W. Edwards.....	Fredericktown.....	41 40	36 15
		Smithfield.....	Dec. 16-17.....	400	John McGuire.....	Centerburg.....	54 70	27 79
		Mt. Vernon.....	Feb. 5-6.....	900	A. J. Smith.....	Painesville.....	118 68	14 00
		Fredericktown.....	Feb. 5-6.....	450	C. J. Richardson.....	Willoughby.....	60 00	13 80
		Painesville.....	Dec. 4-5.....	250	Wm. Eaton.....	La Belle.....	60 00	6 00
		Willoughby.....	Feb. 12-13.....	400	J. C. Williams.....	Brownville.....	41 07	27 25
		Proctorville.....	Dec. 23-24.....	200	G. A. Henry.....	Bellevue.....	41 07	14 10
		Brownville.....	Jan. 22-23.....	550	F. S. Reedy.....	Elyria.....	60 00	28 75
		Granville.....	Feb. 1-2.....	400	R. B. Adams.....	Copopa.....	60 00	15 25
		Bellevue.....	Dec. 16-17.....	200	R. B. Herrick.....	Wellington.....	60 00	89 75
		Rushsylvania.....	Dec. 28-29.....	150	J. L. Pray.....	Whitehouse.....	60 00	31 00
		Elyria.....	Jan. 4-5.....	150				
		Wellington.....	Feb. 26-27.....	300				
		East Toledo.....						
		Monclova.....						

COUNTY FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON OF 1891 AND 1892—Concluded.

County.	Population.	Petitions for organization received from—	Petitions granted and institutes held at—	Time granted.	Attendance reported.	Secretary.	Post-office.	Amount from county funds allowable to local society under the law.	Reported expense to local society.
Madison	20,657	London..... Plain City..... Canfield.....	London..... Plain City..... Canfield.....	Dec. 9-10..... Jan. 22-23..... Dec. 2-3.....	100..... 450..... 550.....	J. W. Byers..... E. Bidwell..... I. A. Manchester.....	London..... Reascoe..... Canfield.....	\$30.08..... 30.08..... 60.00.....	\$18.25..... 15.00..... 15.00.....
Maioning	55,979	North Jackson..... Marion..... Seville.....	North Jackson..... Marion..... Seville.....	" 30-31..... " 18-19..... " 14-15.....	850..... 220..... 550.....	J. E. Johnson..... Gertie Lawrence..... L. W. Strong.....	Tiffin..... Marion..... Seville.....	60.00..... 60.00..... 74.18.....	41.65..... 25.10..... 29.10.....
Marion	24,777	Hinkley..... Medina..... Mallett Creek.....	Chippewa Valley..... Medina..... Mallett Creek.....	" 14-15..... " 14-15..... Jan. 6-7.....	550..... 200..... 200.....	Wm. K. Coover..... Mennich Nettleton..... Miss Mary Carlton.....	Hinkley..... Windfall..... Mallett Creek.....	83.61..... 83.61..... 83.61.....	29.10..... 29.10..... 28.30.....
Medina	21,742	Locust..... Chatham Center..... Pomeroy.....	Mallett Creek..... Locust..... Chatham Center.....	Jan. 6-7..... " 14-15..... " 14-15.....	200..... 200..... 200.....	Geo. Bun..... D. A. Clapp..... G. E. Tillotson.....	Locust..... Chatham Center..... Pomeroy.....	83.61..... 83.61..... 83.61.....	28.30..... 28.30..... 28.30.....
Melroe	29,813	Dresden..... Mendon..... Covington.....	Pomeroy..... Dresden..... Mendon.....	Nov. 30, Dec. 1..... March 4-5..... Dec. 11-12.....	250..... 400..... 550.....	E. D. Robinson..... J. R. Ogden..... F. S. Collins.....	Pomeroy..... Dresden..... Mendon.....	44.71..... 44.71..... 81.66.....	12.25..... 11.50..... 10.00.....
Mercer	27,220	Troy..... Beaumont..... Dayton.....	Covington..... Troy..... Beaumont.....	Jan. 18-19..... Jan. 25-26..... Feb. 19-20.....	900..... 550..... 225.....	S. B. Freshour..... W. J. Tenney..... J. L. Gillespie.....	Covington..... Troy..... Beaumont.....	119.26..... 119.26..... 60.00.....	49.50..... 49.50..... 29.50.....
Miami	89,754	Dayton..... Miamisburg..... Chester Hill.....	Dayton..... Miamisburg..... Chester Hill.....	Feb. 12-13..... " 12-13..... " 19-20.....	500..... 380..... 275.....	R. C. Bradford..... D. D. Tibbels..... Dudley Larkin.....	Dayton..... Miamisburg..... Chester Hill.....	60.00..... 60.00..... 57.42.....	29.55..... 29.55..... 19.53.....
Monroe	26,175	Cardington..... Iberia..... Fresenburg.....	Cardington..... Iberia..... Fresenburg.....	Jan. 19-20..... Dec. 21-22..... " 14-15.....	300..... 450..... 550.....	Dan Krela..... James Auld..... R. E. McAnn.....	Cardington..... Iberia..... Fresenburg.....	27.18..... 27.18..... 60.00.....	17.44..... 17.44..... 83.07.....
Montgomery	100,852	Norwich..... White Cottage..... Caldwell.....	Norwich..... White Cottage..... Caldwell.....	Dec. 21-22..... " 25-26..... Jan. 27-28.....	550..... 225..... 150.....	Robert Jamison..... J. T. Roberts..... L. H. Deyold.....	Norwich..... White Cottage..... Caldwell.....	60.00..... 60.00..... 62.35.....	86.80..... 86.80..... 19.50.....
Morgan	19,143	Port Clinton..... Paulding..... Thornville.....	Port Clinton..... Paulding..... Thornville.....	" 1-2..... " 11-12..... Dec. 7-8.....	60..... 550..... 550.....	T. W. Payne..... S. J. Overmire..... S. A. Alspaugh.....	Port Clinton..... Paulding..... Thornville.....	65.92..... 65.92..... 93.45.....	51.18..... 51.18..... 30.00.....
Morrow	18,120	Williamsport..... Ashville..... Waverly.....	Williamsport..... Ashville..... Waverly.....	" 16-17..... Feb. 19-20..... Dec. 9-10.....	550..... 550..... 100.....	F. J. Stewart..... F. J. Stewart..... G. W. Eager.....	Williamsport..... Ashville..... Waverly.....	40.43..... 40.43..... 52.44.....	40.00..... 38.25..... 16.20.....
Muskingum	51,210	Waverly.....	Waverly.....	Dec. 9-10.....	100.....	G. W. Eager.....	Waverly.....	52.44.....	16.20.....

Portage	27,868	Garrettsville	Jan 25-26	650	O. S. Ferris	Garrettsville	41 80	34 15
Preble	23,421	Kent	Dec 28-9	800	W. W. Patton	Kent	41 80	31 30
Putnam	30,188	Eaton	Feb 26-27	550	D. B. Moses	Windham	35 13	20 92
Richland	33,072	Lewisburg	Jan 13-14	325	E. Schlotterbeck	Eaton	35 13	19 98
Ross	39,454	Columbus Grove	Dec 9-10	800	R. E. Morrow	N. W. Westville	45 28	78 75
Sandusky	30,617	Leipsic	Jan 20-21	150	R. N. Jones	Gouner	45 28	78 75
Scioto	33,377	Belleville	Dec 18-19	500	F. M. Hummon	Leipsic	45 28	78 75
Seneca	40,869	Shelby	Dec 28-29	350	J. H. Palm	Lexington	57 10	44 50
Shelby	24,707	Frankton	" 11-12	200	G. W. Rodgers	Shelby	57 10	44 50
Stark	84,170	Kingston	Feb 8-9	175	Simon Holderman	Kingston	59 18	35 65
Summit	51,089	Frankfort	Jan 11-12	150	M. J. Jamison	Roxabell	59 18	23 82
Trumbull	42,373	Fremont	Dec 30-31	500	J. W. Walton	Fremont	45 92	27 85
Tuscarawas	46,618	Clyde	Dec 7-8	175	W. C. Gray	Clyde	45 92	27 85
Union	22,860	Harrisonville	Feb 19-20	375	H. A. Brown	Gervais	53 06	25 50
Van W. rt.	29,671	Haverhill	Jan 13-14	550	Chas. Brush	Scioto	53 06	25 50
Warren	25,468	Tiffin	Dec 29-30	500	J. H. Knapp	Republic	60 00	30 00
Washington	42,380	Bloomville	Feb 6-6	650	A. N. Shaw	Sidney	37 06	39 90
Wayne	39,005	Sidney	Feb 15-16	450	"	New Baltimore	37 06	39 90
Williams	24,897	Marion Center	" 8-9	250	F. N. Bryan	Anton	60 00	20 00
Wood	44,392	Canal Dover	Dec 30-31	300	A. Pontius	R-mson Corners	60 00	29 48
Wyandot	21,722	Osborne Corners	Feb 1-2	175	W. W. Bolles	Brittain	60 00	7 50
Totals		North Springfield	Jan 4-5	325	E. H. Schrop	Warren	60 00	49 43
		Cortland	Nov 31, Dec 1	375	J. A. Esabrook	Gustavus	60 00	-29 45
		Gustavus	Jan 1-2		C. G. Williams	Klusman	60 00	
		Klusman	Dec 4-5		J. E. Andrews	Somerdale	60 00	
		Ballie	Jan 13-14	750	A. J. B. Williams	"	60 00	
		Canal Dover	" 27-28	530	D. G. Gierliet	Marysville	34 20	34 50
		Marysville	Dec 16-17	530	J. D. Graham	Richwood	34 20	32 90
		Richwood	Jan 13-14	275	T. S. Gilliland	Van Wert	44 50	18 95
		Van Wert	Feb 21-25	625	E. N. Runyon	Ohio City	44 50	14 85
		Ohio City	Jan 15-16	300	F. D. Miller	Franklin	38 20	44 45
		Franklin	Feb 12-13	400	N. L. Bunnell	Waynesville	38 20	23 65
		Lebanon	Jan 29-30	300	C. P. Dyar	Marietta	60 00	4 50
		Marietta	Feb 3-4	300	J. R. Sheldon	Waterford	58 50	50 35
		Waterford	Dec 29-29	400	Frank Swartz	Shreve	58 50	50 00
		Shreve	" 7-8	325	C. W. Rittenhouse	Wooster	58 50	
		Wooster	Jan 8-9	200	Bartlett Thomson	Springville	87 34	6 00
		Bryan	March 2-3	200	A. C. Gills	Spring Lake	87 34	16 55
		Montpelier	Feb 26-27	700	J. L. Kramer	Bowling Green	120 00	22 17
		Bowling Green	Jan 20-21	150	S. P. Kall	Upper Sandusky	82 98	10 00
		Upper Sandusky	March 2-3	150			82 98	
		Nevada					\$7,578 61	\$4,126 29

INDEPENDENT INSTITUTES HELD IN 1891-92, AND REPORTED TO STATE BOARD OF AGRICULTURE.

Counties.	Place.	Date.	Secretary.	Post-office.	Average attendance.	Cost.
Medina.....	Chatham Center.....	November 17-18.....	D. A. Clapp	Chatham Center.....	250	\$39 00
Belmont	Flushing.....	January 14 15.....	J. A. Kirkpatrick.....	.....	500	.....
Summit.....	Cuyahoga Falls.....	" 8-9.....	M. Crawford	Cuyahoga Falls .....	.....	.....
Preble.....	Camden .....	.....	S. E. Morton	Camden .....	.....	.....
Jefferson	Smithfield .....	.....	Willi F. Carr .....	.....	.....	.....
Medina.....	Hinkley.....	January 6-7.....	W. K. Coover.....	Hinkley.....	.....	.....
Knox.....	Centerburg	February 26-27.....	John McGuire	Centerburg	750	.....
Licking	Montgomery Station.....	.....	Carey Montgomery	Montgomery Station.....	100	.....

·LIST OF SPEAKERS AND THEIR TOPICS FOR INSTITUTE
SEASON 1891 92.

FROM OHIO STATE UNIVERSITY.

PRESIDENT W. H. SCOTT, COLUMBUS.

1. What the Ohio State University is doing for the Farmers' Sons.
2. An Outlook from the Farm.
3. What a Farm may be made to Yield.

PROF. EDWARD ORTON, COLUMBUS.

1. The Stored Power of the World. (n.)
2. The New Agriculture. (n.)
3. The Geological History of Soils.
4. Geology and Water Supply.

PROF. JAMES CHALMERS, COLUMBUS.

1. Crumbs.
2. The Farmer Should be Free.
3. Is the Young Man Safe?
4. Opportunity on the Farm for Literary Improvement.
5. The Rewards of Endurance.
6. The Mirror of Nature.
7. Evenings at Home and Farm.

FROM AGRICULTURE DEPARTMENT, OHIO STATE UNIVERSITY.

PROF. H. A. WEBER, COLUMBUS.

1. Mineral Fertilizers.
2. Barn-Yard Manures.
3. Food Adulteration.

PROF. WILLIAM B. LAZENBY, COLUMBUS.

1. Weeds and Insects.
2. Science on the Farm.
3. Grasses for Meadows, Pastures and Lawns.
4. Fruit for the Farmer's Family.
5. Tree Planting for Shade, Ornament and Timber.
6. How to Overcome the Disadvantages of Farm Life.
7. Our Agricultural Colleges, what they are and what they are not.
8. History and Management of Honey Bees.

PROF. D. S. KELLCOTT, COLUMBUS.

1. Insects Injurious to Stock.
2. Insect Pests of the Garden.
3. Insect Pests of the Orchard.
4. Insects Injurious to Forests and Shade Trees.

PROF. W. A. KELLERMAN, COLUMBUS.

1. Course in Botany for the Farmer.
2. Prevention of Rusts and Smuts.
3. Diseases of the Grape.
4. Scope of Vegetable Pathology.
5. Life History of some Vegetable Parasites.

FROM MIAMI UNIVERSITY, OXFORD, O.

PRESIDENT W. O. THOMPSON, OXFORD, O.

1. Public Education.
2. Some Seed Thoughts for Farmers' Sons.
3. Irrigation Farming in Colorado.

FROM AGRICULTURAL EXPERIMENT STATION, COLUMBUS, O.

CHAS. E. THORNE, DIRECTOR, COLUMBUS.

1. The Fertilizers of the Farm.
2. The Fertilizers of Commerce.
3. Fertilizers for Wheat. (A Series, to be given in order named.)
4. Forty Years Wheat Culture in Ohio.
5. The Spraying of Orchards.
6. How to Keep the Boy on the Farm. (n.)

W. J. GREEN, COLUMBUS.

Spraying Orchards and Gardens as a protection against injury from fungi and insects. (With practical illustrations.)

J. FREMONT HICKMAN, COLUMBUS.

1. Silos and Ensilage.
2. Stabling for Dairy Cows.
3. Some Suggestions on Wheat Growing.
4. Commercial Fertilizers.
5. Barnyard Manures.
6. Tile Drainage a Factor in Farm Economy.
7. Some Obstacles to Agriculture.
8. Some Hints on Growing Mangel Wurzel.

F. M. WEBSTER, COLUMBUS.

1. Insect Enemies of Corn.
2. Hessian Fly.
3. Insect Enemies of Grass and Clover Land.
4. Insects Affecting Cereals.

LECTURERS EMPLOYED BY THE OHIO STATE BOARD OF AGRICULTURE.

E. F. ALBAUGH, COVINGTON.

1. Profitable Wheat Culture.
2. Horticulture on the Farm.
3. The Better Way in Butter-making.
4. Tile Drainage.
5. Our Boys.

ALVA AGEE, CHESHIRE, O.

1. The Farmer as a Student.
2. The Needs of the Farmer.
3. How Shall We Educate Our Children?
4. The True Aim of Farmers' Organizations.
5. Mixed Farming vs. Specialties.

COL. J. H. BRIGHAM, DELTA, O.

1. Some Suggestions to Ambitious Boys on the Farm.
2. Taxation.
3. Will Western Competition Drive Eastern Stock Growers to the Wall?
4. Should Eastern Farmers Be Taxed to Irrigate and Bring Under Cultivation the Deserts of the West?
5. Ranch Farming in the Northwest.

WALDO F. BROWN, OXFORD, O.

1. Weeds.
2. A Wheat Talk.
3. Trees—What, When and How to Plant.
4. The When and the How in Farming.
5. A Garden Talk.
6. Barns and other Buildings.
7. Foods and Feeding.
8. Incidental Profits of the Farm.
9. Wanted, a Man. (n.)

W. I. CHAMBERLAIN, HUDSON, O.

1. Luck (?) in Farming.
2. Why we Tile Drain Land.
3. How to Tile Drain Land. (Illustrated.)
4. The Orchard: Its Profits.
5. The Sugar Camp: Its Care and Profits.
6. Wheat: Its Importance and Cultivation.
7. Barns for Stock and Crops. (Illustrated.)
8. Diversified vs. Mixed or Specialty Farming.
9. Official Crop Reports: A Help or a Hindrance to us?
10. The Farmer's Food for Body and Mind. (n.)

11. What Higher Education Pays. (n.)
12. The Farmer's Duty Outside of his Farm and Farming. (n.)
13. The Limitations and the Possibilities of American Agriculture. (n.)

W. N. COWDEN, QUAKER CITY, O.

1. Care and Management of Sheep.
2. Diseases of Sheep and Remedies.
3. Community of Interest Among Breeders of Fine Stock.
4. Who are the Producers?
5. Laws Needed for Agriculture.
6. The Farmer's College.
7. Agricultural Chestnuts.

JOSHUA CRAWFORD, GALION, O.

1. Drainage of Clay Soils.
2. Reading Course for Farmers.
3. The Farmer as a Business Man.
4. Our Farm Homes. (n.)

F. A. DERTHICK, MANTUA, O.

1. Methods of Legislation.
2. Farmer Organizations on Trial.
3. Weeds in Gardens and other Places.
4. Adulteration of Food; Its Effect on Agriculture and Public Health.

ALSTON ELLIS, HAMILTON, O.

1. Literature in the Home.
2. Higher Education for Farmers' Children.
3. Debt; A Lecture For the Times.
4. The Study of History.
5. The Ohio System of Public Schools.
6. The Pioneers of Ohio.

E. C. ELLIS, CRESTVIEW, O.

1. How the Fertility of the Old Farm has been Doubled.
2. Does Farming Pay?
3. How the Profits of the Farm may be Increased.
4. Feeding for Profit.
5. That Boy.
6. Some Things every Farmer Should Know.

W. W. FARNSWORTH, WATERVILLE, O.

1. The Family Orchard and Fruit Garden.
2. Small Fruit Culture.
3. Pruning.
4. Keeping the Fertility of Fruit Farms.
5. Shall We Keep the Boy on the Farm.
6. Farmers' Rights.

ABNER L. FRAZER, MULBERRY P. O., O.

1. Our Miserable Roads—Their Need of Improvement.
2. Our County.
3. Farmers Needed in Politics.

WM. H. GILBERT, RICHLAND, N. Y.

1. Butter-making.
2. Breeding for the Dairy.
3. Ensilage as an Economical Cattle Feed.
4. Dairying.
5. Leaks in the Butter Dairy.

GEN. S. H. HURST, CHILLICOTHE, O.

1. The Farm and the Railroad.
2. The Farmer in Politics.
3. The Education of Farmers. (n.)
4. Apples.
5. Peaches.

PROF. SAMUEL JOHNSON, LANSING, MICH.

1. Seven Years' Experience with Ensilage and Silos.
2. Practical Agriculture at Agricultural Colleges.
3. The Needs of Agriculture.
4. The Relations of the Educated Farmer to the Community and the State.
5. The Feeding of Steers of Different Breeds.

W. H. LIKINS, CALEDONIA, O.

1. Organization.
2. Adulteration.
3. Seven Years' Use of Manure Spreader.
4. Financial Conspiracies that Have Enslaved Us.
5. Responsibility of Law Makers.
6. Spoils.
7. Three Pictures—Past, Present and Future of Our Boys and Girls.
8. Health, Happiness and Profit on the Farm.
9. Successes and Failures on the Farm. (Experience.)

HON. A. T. MCKELVEY, ST. CLAIRSVILLE, O.

1. Farmers' Interests in the Legislature.
2. Health Hints.
3. Rural Recreations.
4. Farm Fertilizers.
5. The Pride of Proprietorship in Acreage the Greatest Bar to Success.

GEORGE E. RICE, WARREN, O.

1. Butter-making for Money.
2. Profits of Sheep Husbandry.
3. Saving and Applying Liquid Manures.

4. How to Have Fat Horses.
5. Success and Failure with Ensilage.
6. The Only way to Keep the Boy on the Farm.
7. Tile Drainage for the Farmer.
8. The Cow for Profit.

ALFRED SHIRER, DAYTON, O.

1. Does Thorough Cultivation Pay?
2. Going in Debt.
3. Potato Experience.
4. Farmers' Gardens.
5. Nutmeg Culture.
6. Making and Saving Manure.
7. Why Farming Don't Pay.

T. B. TERRY, HUDSON, O.

1. Covered Barn-yard, and Manure Saving and Handling. (Illustrated.)
2. Wheat Growing that Pays.
3. Small Fruits for the Farmer.
4. The Farmers' Home.
5. Thoroughness.
6. Money in Clover.
7. Lessening Cost of Production as a remedy for Hard Times.

S. H. TODD, WAKEMAN, O.

1. Hindrances to Sheep Raising in Ohio, and How to Avoid Them.
2. How to Feed Lambs for Profit.
3. The Sire for our Flocks and Herds.
4. Raising Hogs for Profit.
5. Washing Sheep Before Shearing.
6. The Importance of Weeding Out Our Flocks and Herds.
7. How to Avoid Many Diseases.

O. J. VINE, LOUISVILLE, O.

1. Making and Applying Manure.
2. How to Feed and Work Farm Horses.
3. How to Make the Farm Pay Better.
4. Wheat as a Special Crop.
5. Cultivation and Management of Corn.
6. Management of Sheep.
7. Training and Education of Our Children.

CALENDAR OF INSTITUTES, 1891-92.

Towns.	Counties.	Speakers for the day.	Speakers for the day.
		<i>Monday, November 30.</i>	<i>Tuesday, December 1.</i>
Cortland	Trumbull	Terry, Rice.....	Terry, Rice.
Buckland	Auglaize	Brown, Derthick.....	Brown, Derthick.
Pomeroy	Meigs.....	Chamberlain, McKelvey.....	Chamberlain, McKelvey Green.
		<i>Wednesday, December 2.</i>	<i>Thursday, December 3.</i>
Canfield	Mahoning.....	Terry, Rice.....	Terry, Rice.
Lima.....	Allen.....	Brown, Derthick.....	Brown, Derthick.
Gallipolis	Gallia.....	Chamberlain, McKelvey.....	Chamberlain, McKelvey.
		<i>Friday, December 4.</i>	<i>Saturday, December 5.</i>
Signal	Columbiana.....	Terry, Rice.....	Terry, Rice.
Bluffton	Allen.....	Brown, D rthick, Dr. Scott (n).....	Brown, Derthick.
Baltic.....	Tuscarawas.....	Thorne, Lazenby.....	Thorne, Lazenby.
Proctorville	Lawrence.....	Chamberlain, McKelvey.....	Chamberlain, McKelvey.
		<i>Monday, December 7.</i>	<i>Tuesday, December 8.</i>
Wooter	Wayne	Terry, Todd.....	Terry, Todd.
Benton Ridge	Hancock	Brown, Derthick.....	Brown, Derthick.
Thornville	Perry	Thorne, Cowden	Thorne, Cowden.
Haverhill	Scioto	Chamberlain, McKelvey.....	Chamberlain, McKelvey.
		<i>Wednesday, December 9.</i>	<i>Thursday, December 10.</i>
Killbuck	Holmes.....	Terry, Todd.....	Terry, Todd.
Columbus Grove.....	Putnam.....	Brown, Derthick.....	Brown, Derthick.
London	Madison.....	Thorne, Cowden, Thompson (n).....	Thorne, Cowden.
		<i>Friday, December 11.</i>	<i>Saturday, December 12.</i>
Warsaw	Coshocton.....	Terry, Todd.....	Terry, Kellicott.
Mendon	Merer	Brown, Derthick.....	Brown, Derthick.
Jamestown	Greene.....	Thorne, Lazenby, Thompson (n).....	Thorne, Lazenby.
		<i>Monday, December 14.</i>	<i>Tuesday, December 16.</i>
Kingston.....	Ross.....	Chamberlain, Weber.....	Chamberlain, Weber.
		<i>Wednesday, December 16.</i>	<i>Thursday, December 17.</i>
Fredericksburg.....	Knox	Terry, Albaugh	Terry, Albaugh.
Tremont City	Union	Brown, Todd.....	Brown, Todd.
Seville	Lorain	Chamberlain, Thorne.....	Chamberlain, Thorne.
Westerville.....	Pickaway.....	Hurst, Cowden	Hurst, Cowden.
		<i>Friday, December 18.</i>	<i>Saturday, December 19.</i>
Belleville	Richland	Terry, Albaugh, Dr. Scott (n)...	Terry, Albaugh.
Marion	Marion	Brown, Todd, Orton (n)	Brown, Todd.
Strongsville.....	Cuyaboga.....	Chamberlain, Thorne.....	Chamberlain, Thorne.
Sabina.....	Clinton.....	Hurst, Chalmers.....	Hurst, Chalmers.
		<i>Monday, December 21.</i>	<i>Tuesday, December 22.</i>
Olive Green.....	Delaware.....	Terry, Albaugh	Terry, Albaugh.
Iberia	Morrow.....	Brown, Todd, Green.....	Brown, Todd.
Polk	Ashland.....	Chamberlain, Gilbert.....	Chamberlain, Gilbert.
Greenwich	Huron.....	Hickman, Agee	Hickman, Agee, Green.
		<i>Wednesday, December 23.</i>	<i>Thursday, December 24.</i>
Granville	Licking	Terry, Albaugh	Terry, Albaugh.
Shelby.....	Richland	Chamberlain, Gilbert, Green...	Chamberlain, Gilbert.
Mechanicsburg.....	Champaign	Hickman, Agee	Hickman, Agee.
Bloomfield	Seneca	Brown, Todd.....	Brown, Todd.

CALENDAR OF INSTITUTES, 1891-92—Continued.

Towns.	Counties.	Speakers for the day.	Speakers for the day.
<i>Friday, December 26.</i>			
Norwich.....	Muskingum.....	Terry, Gilbert.....	Terry, Gilbert.
<i>Monday, December 28.</i>			
Wellington.....	Lorain.....	Terry, Gilbert.....	Terry, Gilbert.
Kent.....	Portage.....	Brown, Lazenby.....	Brown, Lazenby, Green.
Shreve.....	Wayne.....	Chamberlain, Thorne.....	Chamberlain, Thorne.
<i>Wednesday, December 30.</i>			
Clyde.....	Sandusky.....	Terry, Gilbert.....	Terry, Gilbert.
North Jackson.....	Mahoning.....	Brown, Lazenby, Green.....	Brown, Lazenby.
Canton.....	Stark.....	Chamberlain, Thorne.....	Chamberlain, Thorne.
<i>Friday, January 1.</i>			
Port Clinton.....	Ottawa.....	Terry, Gilbert.....	Terry, Gilbert.
Gustavus.....	Trumbull.....	Brown, Lazenby.....	Brown, Lazenby.
Leontia.....	Columbiana.....	Chamberlain, Thorne, Green.....	Chamberlain, Thorne.
<i>Monday, January 4.</i>			
East Toledo.....	Lucas.....	Terry, Gilbert.....	Terry, Gilbert.
N. Springfield.....	Summit.....	Brown, Vine.....	Brown, Vine.
*Winterville.....	Jefferson.....	Chamberlain, Hickman.....	Chamberlain, Hickman.
<i>Wednesday, January 6.</i>			
Wauson.....	Fulton.....	Terry, Gilbert.....	Terry, Gilbert.
Mallet Creek.....	Medina.....	Brown, Vine.....	Brown, Vine.
Martin's Ferry.....	Belmont.....	Chamberlain, Hickman.....	Chamberlain, Hickman.
<i>Friday, January 8.</i>			
Bryan.....	Williams.....	Terry, Gilbert.....	Terry, Gilbert.
Millersburg.....	Holmes.....	Brown, Kellicott.....	Brown, Kellicott.
Mt. Pleasant.....	Jefferson.....	Chamberlain, Hickman.....	Chamberlain, Hickman.
<i>Monday, January 11.</i>			
P. ulding.....	Paulding.....	Terry, T. dd, Green.....	Terry, T. dd.
Plainfield.....	Coshocton.....	Brown, Brigham.....	Brown, Brigham.
Monroe.....	Butler.....	Hickman, Gilbert, Thompson (n).....	Hickman, Gilbert.
<i>Wednesday, January 13.</i>			
Fremont.....	Sandusky.....	Chamberlain, Johnson.....	Chamberlain, Johnson.
<i>Thursday, January 14.</i>			
Van Wert.....	Van Wert.....	Terry, Todd, Green.....	Terry, Todd.
Canal Dover.....	Tuscarawas.....	Brown, Brigham.....	Brown, Brigham.
Lewisburg.....	Preble.....	Hickman, Gilbert.....	Hickman, Gilbert, Green.
Tiffin.....	Seneca.....	Chamberlain, Johnson.....	Chamberlain, Johnson.

*Two miles from Fernwood, on Pan-handle Railway.

Columbus, Tuesday January 12.

BREEDERS' AND FARMERS' INSTITUTE.

CITY HALL.

Wednesday, January 13.

BREEDERS' AND FARMERS' INSTITUTE.

CITY HALL.

Thursday, January 14.

ANNUAL AGRICULTURAL CONVENTION.

SENATE CHAMBER.

CALENDAR OF INSTITUTES, 1891-92—Continued.

Towns.	Counties.	Speakers for the day.	Speakers for the day.
<i>Friday, January 15.</i>			
Greenville.....	Darke.....	Terry, Shirer, Thompson (n).....	Terry, Gilbert.
Carrollton.....	Carroll.....	Brown, Brigham.....	Brown, Brigham.
Franklin.....	Warren.....	Hickman, Gilbert, Thompson (n).....	Hickman, Thompson, Green.
Sandusky.....	Erie.....	Chamberlain, Johnson.....	Chamberlain, Johnson.
Holgate.....	Henry.....	Todd, Chalmers.....	Todd, Chalmers.
<i>Monday, January 18.</i>			
Covington.....	Miami.....	Terry, Derthick, Greene.....	Terry, Derthick.
Freeport.....	Harrison.....	Brown, Lazenby.....	Brown, Lazenby.
Mt. Blanchard.....	Hancock.....	Chamberlain, Johnson.....	Chamberlain, Johnson.
<i>Wednesday, January 20.</i>			
Cable.....	Champaign.....	Terry, Derthick, Green.....	Terry, Derthick.
Barnesville.....	Belmont.....	Brown, Lazenby.....	Brown, Lazenby.
Upper Sandusky.....	Wyandot.....	Chamberlain, Johnson.....	Chamberlain, Johnson.
Leipsic.....	Putnam.....	Todd, Hickman.....	Todd, Hickman.
<i>Friday, January 22.</i>			
Plain City.....	Madison.....	Terry, Derthick.....	Terry, Weber.
Quaker City.....	Guersey.....	Brown, Lazenby.....	Brown, Lazenby.
Red Oak.....	Brown.....	E. C. Ellis, A. Frazer.....	E. C. Ellis, A. Frazer.
Belleville.....	Logan.....	Chamberlain, Johnson.....	Chamberlain, Kellicott.
Bowling Green Ch.....	Licking.....	Bonham, Thorne.....	Agee.
<i>Monday, January 25.</i>			
Garrettsville.....	Portage.....	Terry, Rice.....	Terry, Rice.
Beaumont.....	Monroe.....	Brown, Agee.....	Brown, Agee.
Springfield.....	Clark.....	Chamberlain, McKelvey.....	Chamberlain, McKelvey.
<i>Wednesday, January 27.</i>			
Burton.....	Geauga.....	Terry, Gilbert.....	Terry, Gilbert.
Chadwell.....	Noble.....	Brown, Agee.....	Brown, Agee.
Marysville.....	Union.....	Chamberlain, McKelvey.....	Chamberlain, McKelvey.
<i>Friday, January 29.</i>			
Ashtabula.....	Ashtabula.....	Terry, Gilbert.....	Terry, Gilbert.
Marietta.....	Washington.....	Brown, Agee.....	Brown, Agee.
Cardington.....	Morrow.....	Chamberlain, McKelvey.....	Chamberlain, Chalmers.
<i>Monday, February 1.</i>			
Euclid.....	Cuyahoga.....	Terry, Gilbert.....	Terry, Gilbert.
Rushsylvania.....	Logan.....	Brown, Shirer.....	Brown, Shirer.
Osborn Corners.....	Summit.....	Chamberlain, Vine, Green.....	Chamberlain, Vine.
<i>Wednesday, February 3.</i>			
Jefferson.....	Ashtabula.....	Terry, Gilbert.....	Terry, Gilbert.
Unionville.....	Auglaize.....	Brown, Shirer.....	Brown, Shirer.
Townsend.....	Huron.....	Chamberlain, Vine, Green.....	Chamberlain, Vine.
Watertown.....	Washington.....	Cowden, Hickman.....	Cowden, Hickman.
<i>Friday, February 5.</i>			
Painesville.....	Lake.....	Terry, Gilbert.....	Terry, Gilbert.
Sidney.....	Shelby.....	Brown, Shirer, Thompson (n).....	Brown, Shirer.
Mt. Vernon.....	Knox.....	Chamberlain, Green, Kellicott.....	Chamberlain, Kellicott.
<i>Monday, February 8.</i>			
*Venice.....	Butler.....	Terry, Thorne.....	Terry, Thorne.
Frankfort.....	Ross.....	Hurst, (n) Shirer, Kellicott.....	Hurst, Shirer.
Williamburg.....	Clermont.....	Brown, Todd, Thompson (n).....	Brown, Todd.
Marlboro.....	Stark.....	Chamberlain, Derthick.....	Chamberlain, Derthick.
<i>Wednesday, February 10.</i>			
Glendale.....	Hamilton.....	Terry, Thorne, Thompson (n).....	Terry, Thorne.
Hainsboro.....	Hamilton.....	Hurst, Shirer.....	Hurst, Shirer.
Harrison.....	Hamilton.....	Brown, Todd.....	Brown, Todd.
Cadiz.....	Hamilton.....	Chamberlain, Derthick.....	Chamberlain, Derthick.

*Six miles from Hamilton, on C. H. & D. Ry.

CALENDAR OF INSTITUTES, 1891-92—Concluded.

Towns.	Counties.	Speakers for the day.	Speakers for the day.
<i>Friday, February 12.</i>			
Lebanon	Warren	Terry, Thorne, Thompson (n)...	Terry, Thorne.
Mulberry	Clermont	Hurst, Shirer	Hurst, Chalmers.
Wilmington	Clinton	Todd, Lazenby	Todd, Lazenby.
Brownsville	Licking	Chamberlain, Derthick	Chamberlain, Kellicott.
Miamisburg	Montgomery	Albaugh, Hickman, Thompson (n)	Hickman, Albaugh.
<i>Monday, February 15.</i>			
Nelsonville	Athens	Terry, E. C. Ellis	Terry, E. C. Ellis.
Georgetown	Brown	Hurst, Likins	Hurst, Likins.
Jackson Centre	Shelby	Brown, Todd	Brown, Todd.
Logan	Hocking	Chamberlain, Cowden	Chamberlain, Cowden, Green.
<i>Wednesday, February 17.</i>			
Canal Winchester	Franklin	Terry E. C. Ellis	Terry, E. C. Ellis.
West Union	Adams	Hurst, Likins	Hurst, Likins.
Xenia	Green	Brown, Todd, Orton, (n)	Brown, Todd.
Athens	Athens	Chamberlain, Cowden, Green	Chamberlain, Cowden.
<i>Friday, February 19.</i>			
Ashville	Pickaway	Terry, C. E. Ellis	Terry, Lazenby.
Harrisonville	Scioto	Hurst, Likins	Hurst, Likins.
Dayton	Montgomery	Brown, Todd, Thompson (n)	Brown, Thompson.
Chester Hill	Morgan	Chamberlain, Kellerman	Chamberlain, Kellerman.
<i>Monday, February 22.</i>			
Defiance	Defiance	Terry, McKelvey	Terry, McKelvey.
Delaware	Delaware	Brown, Hickman	Brown, Hickman.
<i>Wednesday, February 24.</i>			
Napoleon	Henry	Terry, McKelvey	Terry, McKelvey.
Ohio City	Van Wert	Brown, Lazenby	Brown, Lazenby.
<i>Friday, February 26.</i>			
Monclova	Lucas	Terry, McKelvey	Terry, McKelvey.
Eaton	Preble	Brown, Hickman, Thompson (n)	Brown, Hickman.
Bowling Green	Wood	Chamberlain, Orton, (n) Lazenby	Chamberlain, Lazenby.
Centerburg	Knox	Chalmers, Weber	Chalmers, Weber.
<i>Monday, February 29.</i>			
Hicksville	Defiance	Terry, McKelvey	Terry, McKelvey.
<i>Wednesday, March 2.</i>			
Montpelier	Williams	Terry, McKelvey	Terry, McKelvey.
Nevada	Wyandott	Todd	Todd.
<i>Friday, March 4.</i>			
Delta	Fulton	Terry, McKelvey	Terry, McKelvey.
Dyserville	Meigs	Lazenby, Todd	Lazenby, Todd.

There were applications for institutes at the following places in excess of the number of institutes the Board of Agriculture could assist under the law. Such aid as was possible was extended and institutes were held at the following and several other places of which no formal report has been filed at this office :

Chatham Center	Medina county.
Flushing.....	Belmont county.
Cuyahoga Falls	Summit county.
Camden	Preble county.
Smithfield	Jefferson county.
Hinkley	Medina county.
Montgomery Station.....	Licking county.

PAPERS READ
AT
FARMERS' INSTITUTES, 1891--92,
SELECTED BY THE INSTITUTE

AND

Forwarded to Secretary Bonham, with Request to Publish in the Annual
Institute Report.

NEVER TOO OLD TO LEARN.

By E. S. WILSON, EDITOR IRONTON REGISTER, IRONTON, O.

After the plowing and sowing and reaping; after the planting and digging; after the crowded cellars and well-filled barns; after the fields dotted with juicy haystacks; after the corn has been changed into pork, and the steers have waxed fat and been sold to the butchers; after the Thanksgiving turkey has gobbled his last gobble, and December has thrown her white sheet over the dead summer—then what?

Then come Farmers' Institutes, where the tillers of the soil meet to talk of seeds, of methods, of markets, of weeds, and give experiences and suggestions, and advise with each other as to how to make farm life better and more profitable. Here come also their wives, bright with happy greetings and kindly encouragements, for the farmers' wives, of all the women in this world, stand up for their husbands. And their daughters come, too, with their happy smiles and words of cheer, to deck the occasion as sweetly as flowers do a shrine. And the boys, too, some who take after their fathers and follow the noble occupation, and some who don't, gather here to pay tribute of duty and interest to the vocation that lies nearest God. And here come the neighboring storekeeper, the doctor, the preacher, and the school teacher, all products of the farm, and all thoroughly infused with agricultural theories—coming out of respect to the praiseworthy occasions. And then the lecturers, messengers of wisdom, sent by the State Board, with credentials of honor and trust, to reveal the beauties and mysteries of the farm art. And at last comes the country editor, slipping slyly in, who is told a dozen times a day that he ought to know every thing, feeling profoundly abject in his ignorance amid the encircled knowledge of farming, and wondering with mouth open wide, if there is any thing that Professor Chamberlain doesn't know about farming, and if there is, it must be a special dispensation from on high to the pole priestess of the Mikado, or the sacred wahoo of some oriental mufti.

But I am glad I am here, and if I can add one word, not far astray from my own line, nor yet distant from your own lives, that will prove an inspiration to a single

heart, or a suggestion strong enough to lift a career one peg above the humdrum of life, I shall be gladder still.

I start what I want to say with an old adage, so old and oft-repeated that it has almost lost its meaning: "One is never too old to learn." The application is universal, but on this occasion I hope to invest it with special force. In the winter time, when there is some leisure on the farm, and when the long nights are not torn up by shows and soirees, and the unremitting blandishments of town, some of them good and most of them bad; when the house is nightly the scene of family re-unions, and the bright fire gleams on parents and children; when there is a little world gathered to itself that feels but gently the gravitation of others, golden is the opportunity to practice the maxim that is our text.

One of the greatest calamities in this world is, that when a man or woman gets to be forty or fifty years old, he closes the record, shuts the book, and lives wholly in reminiscence and recollection. Mournful is the psalm of his life. He is pushed from the board, and is no account. Alas, that it is so. The only hope he has in life is to hold his own. He is at a standstill, and expects to make no further advancement, except to build a bigger barn, or buy a few more imported sheep. His soul is satisfied with current facts and figures of the market, and does not aspire to any intellectual summits that shine around him. He sees his boys and girls grow up about him, and imagines for some reason or other, the ambitions of his life have passed over to them, and that all the hope he can have arises out of his own despair, and that all the anticipations that destiny has reserved for him, converge in their future welfare. Thus he limps along through his middle age into his old age.

He reads no book, except probably the life of a great general or traveler, for mere entertainment only. He does not read to equip his soul—to make his intellect clear and stalwart. He has abandoned education long ago. Literature is a desert, philosophy a swamp, and science a mountain waste to him. These are things for the children; let them study these themes; as for himself he's played out.

Away with such a silly and wicked delusion! It is never too late to learn—not only learn how to crib corn and ring hogs, but that knowledge of science, literature and history that sheds radiance upon the whole life, and keeps burning the fires of ambition and endeavor. History is full of examples of men who became authors, artists, and great benefactors of their race, who never learned to read till past middle age.

The manner of one's life forms the education that it bestows. If eating and sleeping is the end of one's work, that is the stamp he makes on all about him. This thing of a father or mother falling back to a condition of innocuous desuetude, is hardly possible, for it can not be harmless. A parent owes to a child his best life, and his best life can not be sitting on a log sighing over sunken possibilities. It is his duty to preserve his pluck, and keep his eyes on some shining mark. A man or woman has no right to abandon his desire for an education because he is forty, fifty, sixty, or even seventy years old. The intellect is a talent which must not be wrapped up in a napkin and laid away. It should develop and grow, and go into God's presence with all the beauty with which it can be arrayed.

That is a man's duty to himself, but his duty to his children and those around him, doubles the obligation. There is nothing more beautiful in life, than where a parent, inspired by self-improvement, associates his boy or girl in his work, and guides them into higher thought and action. 'Tis said that John Stuart Mill, one of the greatest of English thinkers, never saw inside of a school house, but he had a modest, educated father who worked alongside of his boy, and infused him with a purpose and a bent, that finally flourished into the greatest logician of the nineteenth century. Let us remember that the true method of education is not standing over a boy and cramming him with conjugations and cube roots, but it is the genial

and sparkling influence of association, that leads the boy out of his mental indolence into the pursuit of the beautiful and true.

But some gentle friend might say: "That is a very agreeable theory, but what may a poor clodhopper like myself do in such a case. I have neither learning nor appreciation of such things." What if the poor tailor, who afterward became a President of the United States, had set up such an exclamation when his wife persisted in teaching him the alphabet! Ah, the deeper the rut the stronger the argument for getting out of it.

It is against this surrender of manhood, of womanhood, in the strength of days, that I make this appeal. I protest against allowing the imagination to conjure up necessity that drives so many men and women into a sense, that their ambitions are blasted, their intellects dead, and their lives ended, when there are still twenty to thirty years before them. It is a cruel and unrighteous fate.

It may take gumption and courage to get out, but the way is clear. There is not a farmer but knows that tendency toward any quality can be bred in any thing that grows. He can thus infuse a new tint into the rose, a finer flavor to the peach, or a solidier muscle to the ox. There is nothing that so soon gathers tendency from surrounding conditions as the intellect; there is nothing that so soon yields to the force of association as the soul. But sitting on a log, smoking an old cob pipe and sighing over the days that are no more, will never create such a tendency.

A purpose is needed at the outset. Every success is backed by a well defined purpose, except going to the bad—that is done without *any whatever*. What shall be the purpose? Let it be a knowledge of chemistry, of geology, of natural philosophy, of mineralogy, of botany, of any of the sciences; or let it be literature or psychology, or art, or any branch thereof, it makes no difference; though if there be a liking, let it start that way. Start with the purpose, then build around it the association. First, a book on the subject. It may be a very primary book, but let it be of the latest edition, for they are best illustrated. Let the book be on the table where you sit at noon or in the evening. When you have read two or three pages, or received some interesting information, talk about it to the wife and children, not with the intent to stuff them with it, but as intelligence that is new and important to you. This fortifies you, and besides, may incidentally draw them to it. If the subject relates to things on the farm or in the neighborhood, test the reading by the observation. Find out if the doctor, the preacher or the school teacher know any thing about your topic, and if they do, converse with them. Then, if possible, associate the older children with you in the pursuit, and by kindly companionship, encourage them in the study.

Here is one of the heights of the business—the blending with your pursuit the assistance of the children. This alone is worth all the bother of the effort. It is the very best of educational methods. The home, where the parents get interested in good books—books that increase power and character, and where the children are inspired to study and investigation by the example of their parents, is a better educational institution than Harvard College. Yet, there are thousands of people in this country who declare they can not educate their children for lack of money, when the only cause is lack of grit.

In describing above the course to be followed, I do not pretend to draw an exact schedule, but only to develop the principle, which is, that patience will work out grand results if you but fit your association to the purpose. It will prove easy and pleasant to the man who is heroic enough to turn over a new leaf and declare that he is never too old to learn.

Now, there is another important fact connected with this subject, and one which I had my eye on from the very beginning, and that is the necessity of a live, progressive teacher in every neighborhood; a person that will not only teach school in the school room, but one who so loves education that he is a positive quantity

in the association, that stimulates the young and old in the pursuit of it inside and outside of the school room. His work and conversation should be in that line. He should do what is possible to make homes centers of study. He should form societies for discussions and lectures. He should plan a circulating library, and do what he could to see that the reading of the community is pure and wholesome.

The people should construct for themselves lofty ideals of what a school teacher must be. One's ideal is simply the projection of himself on the field of fancy, and so intelligence and hope form the basis of the best. A community can not have true ideals where the average man and woman has come to the conclusion that there is no more education for them, when they have closed the book, shut their eyes, and surrendered the aspiration of this world to the blight of years. That is not the way to the stars. Stagnation sits with its elbows on its hunkers and parleys for a \$30 teacher, precisely as if one were trading for a mule. Far away roll the silver horizons of the nineteenth century, and refulgent glows the genius of this age, but the man who is continually pottering among the pig pens and forever mending the stable doors, who gives himself not an hour or a minute to subject his soul to their sweetness and light, should never insist upon making his darkened inner consciousness the measure of the stature of the teacher who is demanded in the educational field to-day. On the other hand, where the lives of men have been touched by the glad-some light of knowledge, whether they start the flame themselves, or catch the sparks from others, and the community is pervaded by the spirit and purpose of these men, there is a demand upon the school master, not only for excellence, but that he make that excellence felt in the hearts of the old and young. I want to see a school master with a mission, but I want to see first and foremost a community that can appreciate that mission; and the way to attain to this latter condition, which is really the cause of the farmer, is for every family to hang over the altar of its home the golden maxim, we are never too old to learn; and then act upon it in some of the ten thousand educational channels that reach up to us from every direction. There is no lack of opportunity, but in arranging the effort and mustering the will—there's the rub.

It is a perplexity. I tremble at its solution! I know the lethargy of muscle and the weakness of spirit, and how they conspire to change the intellect into a whiff of indolence and oblivion. A man comes home from plowing, or cutting corn, or butchering hogs—eats a heavy supper, and sits down before the fire. What are oxides, or crinoids, or electrodes, or diastoles or Tennyson's sweet rhythms to him? Not so much as notes in the air. He sits and seems to be thinking, but his deepest reflections are mere brush-heaps of flitting visions. He couldn't read four lines without nodding. He hasn't enough gray matter left in his brain to hide away an infantile idea. What a beautiful spectacle of educational reform! Sure enough! One can always trump up difficulties. But a farmer is not always coming home stone blind from an over day's work. He has his leisure with the rest of men—more evenings at home, more of his own time at his command, more opportunities to read and develop. It may be toil, but it need not be irksome. A man may make himself quite a botanist, a chemist, a mineralogist by reading ten minutes an evening for a year. Of course, he wouldn't be a Gray, a Silliman or a Dana, but he would be of some satisfaction to himself, to his children, and to the community about him.

The whole trouble is in making the start. That is against the grain. So long has the mind drawn off from mental pursuits, that it has grown flabby and lax. What is needed is a little exercise in the right direction. Begin. Grasp the first fact of the science, then rest. And now another fact, let them join together and soothe each other. Then another, and as the days proceed they will grow as naturally and sweetly as a honey-comb. But hold steadily the quiet way. The serpents of the imagination will crawl up to tell you of the golden pippins mellowing in the sunlight over the way, but chase them out and keep steadily on. The tin pan excitement

down at the cross roads may muss up your thoughts, but drown the clatter out with a patient devotion to your book. The anticipations of the morrow, criss-crossed with the prices of potatoes and a trip to town may badger your purpose, but stick to Holy writ and take no thought of the morrow. Bury yourself in your book and let the Devil pipe to his own.

Of course, we can't all be school boys again. The zest and sparkling vigor of those days are gone. The hopes that fed on the creamy fancies of youth have long ago been wrecked on the realities of life. The will-o'-the-wisp has danced his last can-can, and before us is plain ground and rock, and tree, and cattle and men and necessity. Shall we now lose hope and purpose? Shall my soul blend with these hard facts and become one of them? I pray not. Now is the time for knowledge. Now is the time when knowledge changes into wisdom and falls like a sweet benediction on the whole life.

Please do not consider this a sermon because it starts with a text. We are only counseling together. I think it a wretched mistake for we married folk, we middle-aged people, to renounce the love of book learning. It is not only a mistake on our own account, for it is our duty to grow in knowledge as well as in grace; but it is a mistake on others' account, our children and our neighbor's children, and our neighbors themselves, to all of whom we owe a life that will encourage and inspire. Then while breath lasts, let us educate ourselves by our books, and others by our example, so that when the evening of life comes, we will enter the shadows with a light that will brighten the way.

INCIDENTAL PROFITS OF THE FARM.

BY WALDO F. BROWN, OXFORD, O.

LADIES AND GENTLEMEN: I am a firm believer that there is profit in farming. That to the young man who puts thought and intelligence into his work, and who is industrious and economical, the farm offers a fair chance of acquiring a competency by middle life, and a chance for a comfortable old age, and that there is no other calling in which one can be so sure of a comfortable living, and so little danger of coming to want or of losing the capital invested.

It gives also the opportunity to rear our children with strong bodies, and pure minds, and to teach them almost unconsciously habits of industry, and under no other conditions can parents so easily guard their children from corrupt associates. The children on the farm are brought into close communion with nature, and are surrounded by healthful influences, both physical and moral.

We often hear the statement that the farms of our State do not pay six per cent. on the money invested in them, and sometimes the figure is put at three or four per cent., but I am sure that there are many farms so wisely managed as to pay double the highest figures named.

It is true of any calling that those succeed best who are contented and hopeful, and believe that they have a fair chance for success, for the man who loses faith in himself and his ability to succeed, is by this hindered from putting forth his best efforts. There has been too much calamity, howling by men who have preached the gospel (?) of despair, and too often they have done this with the hope of being boosted into office by the discouraged farmers.

The farmer needs pluck and energy, and whatever deprives him of these is a hindrance to success. The difference between the hopeful and the discouraged man is illustrated by the story of the milkman who, driving to the city on a cool October morning, stopped to water his horse, and who absent-mindedly put a pail of water in his milk can and did not notice that he dipped up a pair of frogs. One of them

lacked pluck and said, "I'm a gone frog," and sank to the bottom of the can, resigned to his fate. The other said, "Now, if I can keep on top of this milk until the can is opened, the milkman will be as anxious to get me out as I will be to get out," and he began swimming vigorously. The cold water had lowered the temperature and thinned the milk, and the cream rose rapidly, and the result was that when the can was opened the frog sat on a ball of butter, master of the situation.

Do not allow yourselves to be persuaded that all the ills of life are heaped on the farmer, for there are difficulties and hardships connected with all callings. Rev. Longstroth, the inventor of the movable frame hive for bees, tells a story of an old Kentucky farmer, who became discouraged in farming because the sassafras sprouts—they called them sassafig in the vernacular—grew so abundantly that they were obliged to grub over the corn fields each year. He heard of the new territory of Missouri and sent some of his numerous family of children to see if they could not find a better country than Kentucky. The first letters that came were enthusiastic in praise of the new country, and the old man determined to emigrate, so making the best disposition of his business he could, he loaded his wagons and started, and the neighbors, according to pioneer custom, came on horseback to accompany him as far as they could and get back the first night. As he passed through the village the postmaster brought him out a letter and he stood up in the wagon to read it aloud to his neighbors, for in that day of twenty-five-cent postage letters were so scarce as to be shared by the neighborhood. Well, it was all bad news. Frost and rust had cut off the crops; the ague had shaken all the courage out of his children, and one had died, but the old man read it with an unfaltering voice till he came to the last sentence, which was, "And father, sassafig grows here, too," and that floored him, and he swore, I've been fighting sassafig all my life in old Kentuc, and I'll never go to a new country to begin the battle over again," and so he turned back to his farm.

Now I have little doubt that if discouraged farmers leave the farm, where the investment is perfectly safe, and the income depends largely on the intelligence of the farmer, and goes to the village to compete with men who are trained to their callings, they will be likely to find out perhaps too late that "sassafig grows there, too."

In contrasting the condition of the farmer with men in other callings, we often forget that perhaps a majority of the successful farmers began life absolutely without capital, and that almost without exception they began heavily in debt. It is not fair to the business to compare the farmer with the professional man who in addition to spending eight years of his life in acquiring his collegiate and professional education, has spent money (or had spent) enough to pay for a fair sized farm in acquiring that education. We are rather to compare the farmer with those who are dependent on their labor to support their families and to pay for a home, and establish a business. When we confine the comparison to this class, we shall see, if I mistake not, that a very much larger per cent. of farmers succeed than of the others. I think that many farmers really believe that they work harder than other men of the same means, and certainly much harder than men of large means and success. I believe that no other men who must support their families on a moderate investment, have so many holidays in a year, and they can afford this because their income does not stop when they take a day, for hens lay, cows give milk, and grass and vegetables grow, even on Sunday, and the winter months are a half vacation, at least to the man whose stock is warmly stabled and the food under cover.

I think there is no other calling in which a man with an investment of three or four thousand dollars, can look forward with so little fear to the future, and can have on his table such an abundance of luxuries. The point of failure with too many farmers is that they do not so manage their farms as to have the luxuries which are easily within reach. I think also that few farmers in estimating the profits of the year give the farm credit for any thing that it has furnished and are inclined to say there is no profit in farming if they have not a balance in cash to show at the end of the

year. They may have had an abundance of fruit, vegetables and all that the farm furnishes, and of the best quality, and which would have been entirely beyond their means on a salary of eight hundred dollars in the city, but they do not give the farm credit for this but take it as a matter of course. Now, to bring this question before my audience in a practical rather than a theoretical way, I will give an estimate of what my farm furnished my family when it averaged eight persons. My farm contains ninety acres and is valued on the tax duplicate at less than four thousand dollars, but I will call the plant, including team and tools, five thousand dollars. Now if I should sell my farm at this price I should have just \$800 income from the money if it was loaned at six per cent. interest, and it would be considered a good interest if it was perfectly safe. The fact that government bonds which bring only four per cent. interest command a premium which entirely wipes out the income for several years, shows that it is difficult to loan money at six per cent. where it is perfectly safe. For several years I made an estimate of what my farm furnished my family of eight persons and I conclude that if I only sell enough from the farm to pay the labor bill, taxes and insurance, that I have a much better investment than if the farm was sold and the money loaned at six per cent.

First. I have credited the farm with \$35 for bread stuffs, and no farmer has ever objected to this as too much, and the only reason why my family used so little flour is because we have so much of fruit, vegetables, etc.

Second. I have only credited the farm with \$60 for dairy products, and this would only pay for the butter we use at such prices as I could easily sell it for, and in addition to butter we have cream and milk every day in the year, and in the greatest abundance. In most towns a single quart of milk a day costs \$20 a year, and good cream is a luxury beyond the reach of any but the rich.

Third. I have credited it with \$50 worth of fruit, and while this would be extravagant for the farmer who "can buy berries cheaper than he can grow them," it is far below what the fruit consumed in my family would cost if bought; for we always have an abundant supply of strawberries, raspberries, blackberries and grapes, all we can possibly use, and plenty to can, and usually tree fruits in abundance. The farmer who buys his berries usually furnishes his family two quarts at a time, about twice a week, but we eat a peck of strawberries a day, until the appetite is somewhat sated, when we occasionally miss a meal.

Fourth. I have credited the farm and garden with \$50 for vegetables. This means potatoes 365 days in the year, sweet potatoes for half the year, and a constant succession of fresh garden vegetables from the 20th of April, when we begin using asparagus, until freezing weather in the fall, and the cellar stored for winter with such vegetables as can be kept over. A fourth acre garden will furnish beans, peas, lettuce, spinach, asparagus, tomatoes, cucumbers, radishes, cabbage, beets, onions, celery, and many other vegetables to supply the table of a large family, and the truck patch will give sweet corn for one hundred successive days, and be worth all it costs to furnish succulent feed for the cows to keep up the flow of milk. I doubt if one hundred dollars would buy the vegetables my farm furnishes.

Fifth. I give the poultry yard credit for \$50, for we have fresh eggs in great abundance every day in the year, and all the yellow-legged chickens we want, and turkeys for Thanksgiving and other special occasions.

Sixth. I have credited the farm with \$75 for meats. We have pig pork from pigs fed for lean. Our hams are sugar cured, and our pickle pork is sweet and good. The lard is free from cotton seed-oil, and we know is clean and wholesome, and our beef is abundant and good. At the prices I have named these items foot up \$320, or something more than six per cent. on the entire plant, and I know that nearly every item is far below what it would cost me to buy the amount we use. I know also that the quality is much better than we should get at the grocery. But I am not done with credits yet, for, if I should sell the farm my family would need a home,

and to rent as good a house, with lawn and out-buildings, would cost me from \$15 to \$20 a month. We have a comfortable cottage containing eleven rooms, not counting halls, closets, summer kitchen and cellar, and a coal-house, wood-house, poultry-house, and all necessary out-buildings. I wish to keep within reasonable limits, however, in all my estimates, and so will credit \$12.50 a month for house rent, or \$150 per annum, and this represents three per cent. more on the value of the farm, so that I honestly believe that my farm pays me about ten per cent. interest on the capital invested if I only sold from it enough to pay taxes, insurance and hired help.

I have kept an account of the sales of produce from my farm for twelve years past, and there has been but one year in that time that my sales fell below \$500, and that was a year of failure with the wheat crop and a short potato crop, and I sold \$475 worth. My best year's sales were \$930, and the average has been about \$700 a year. My taxes and insurance is less than one hundred dollars a year, and my labor costs an average of \$300, and practically, I hire all my work done, as my lecture and paper work take up most of my time, and I only look after the stock and help a little in an emergency. From these figures it will be seen that the labor of producing what we use in the family is included in my estimate, and that the incidental profits of my farm are greater than the direct profits, and this is, I think, usually true where the farm is small and the family large, and the farm managed with the idea of furnishing as nearly as possible all the wants of the family.

There are other things which can not be computed in money which are worth taking into consideration. The farmer has no livery bills to pay for his horses which do the farm work, carry the family to church on Sunday, and to the Farmers' Club, Institute, or picnic, and to the County Fair. The luxury of buggy rides would be entirely out of reach of most men of the same means living in town or city. Then the variety of the work on the farm relieves it of that monotony which comes of doing one thing day after day.

The profits of the farm do not depend so much on the long hours of labor as on the intelligence with which that labor is guided, and instead of going to a "Boss" and asking to have his pay increased, and usually being refused, it depends on the farmer's own intelligence and God's blessing on his labors. With industry, economy, intelligence and contentment the farmer has more than an average show for success in life.

WHO ARE THE PRODUCERS?

By W. N. COWDEN, QUAKER CITY, O.

I commence with the proposition, that every one, if he would fulfill the design of his Creator, must be a producer of something that will minister to the substance, comfort or happiness of man or animal. Any one who in any capacity, or in any walk of life, adds to the world's stock of food or clothing, or in any way increases the comfort and happiness of the race, is a producer.

Since the fall of man—since the flaming swords forbade the return to Eden's bowers and beauty and plenty—the natural condition of the earth has been to bring forth the briar and the thorn; and in this state it has been given to us to work out the great problem of life.

Our comforts and pleasures are also made to correspond in a great measure to the labor and genius which we bring to bear on these conditions. The earth being naturally so unfriendly to our wants, and our wants so imperative, bring us face to face with the homely old adage: "Root, hog, or die."

Often in our agricultural papers, in popular addresses, in institutes of farmers and in the halls of legislation, if perchance we send one of our number there, we

meet with the statement that the farmer is the only producer, and that all others are consumers—middle men and parasites on the farmer and should be abolished. This idea attained much prominence a few years ago and some of the laws of a few of the western states, predicated on this idea, brought such dire results, as led to their repeal or modification. The object of this paper is to show that there are other useful producers besides the farmers. It is true that the farmer is in a high and important sense, the first producer. This occupation is the base and keystone, and the topstone too, of every structure in society, and is just as indispensable as the corner-stone or the keystone to the material building. The prosperity of all other industries is assured when the farmer is prosperous, and his want of prosperity marks the decadence of all industries.

All wealth comes primarily from the earth, and those who skillfully cultivate the soil, or mine the precious ores are the primary producers. The farmer is in partnership with nature—stands at her holiest altars, and worships around her most holy shrines and is in closest communion with her, and in return for his devotion, she yields him bounteous crops of grain and fruits. It is true that in this partnership he has called to his aid sunshine and air, and shower and frost, and snow, and they have as silent partners helped in the transformations and transmutations, but the farmer is nevertheless the producer; for his utmost skill and thought have been taxed in utilizing the capital of these silent partners. These silent partners are sometimes sparing of their capital; again they furnish too much, as for instance the rain of the past year. It is hard for the farmer to utilize this capital just now so as to get any other dividend but mind and patience.

All admit that the farmer, as the result of his toil, has produced something that did not before exist and is in the highest sense a producer, but many of his productions are not fitted for human use and other hands must take and manipulate them and fit them for use.

For illustration, I am a producer of wool, but when I have expended my skill and labor on the fleece, it is still in a condition unfit for use and I must send it to a mill to be scoured and carded, and spun and woven into cloth, and then a tailor must fashion it into a garment.

All this is the work of the manufacturer, and hence he too is a producer; he takes a fine ore or grain that is in a useless condition and renders it useful to man, and is hence just as useful to society as a producer as the farmer. But the capital furnished by these silent partners (sunshine, air, shower, frost and snow), may be too sparing in one place or country and a scarcity of one kind of grain or fruit or article is the result. These silent partners may have furnished just the right amount of capital in another place or country and a surplus is the result. This surplus must be conveyed to the place or country where the scarcity exists, and commerce by rail or water thus becomes a producer by adding value to that which was before almost valueless. If commerce is a producer those who make commerce possible, as for instance the coal miner and the inventor, are producers. The one mines the coal that drives the wheels of commerce, the other harnesses the forces of nature stored up in the earth as electricity or gas and makes them subservient to human hands and wills, in increasing production and hastening the exchange of commerce. Thus the manufacturer and the common carrier as well as the agriculturist, are producers. Thus it is seen that the three great indispensable factors of our civilization are agriculture, manufacture and commerce. Each one is necessary to the other, and either one wanting, civilization is impossible.

It will also be noticed that each one of these prime factors of our civilization has arrogated to itself supremacy over the others.

Thus the farmer says to the manufacturer and the common carrier: "I feed you all," and all you produce and carry comes out of my domain—mother earth—and you should bow the knee to me. Give me all I want for my productions, give me all the laws I need for my protection, let me hold all the offices and make and administer all the laws, and, in brief, be humbly subservient to all my demands.

The manufacturer claims that he is the prime factor of our civilization; that the productions of the farmer are largely worthless until he has fitted them for human use, and that they are not worth carrying until so fitted and that he should have the right to fix the price on his own and all other productions; that he should have the fostering care of government, make all the laws, get all the tariffs, etc.

The common carrier says in effect: "I am so important to our civilization, that you can not in any way do without me and so I will do just as I please. I'll fix my charges according to my own sweet will. I'll run my trains and my boats and my ships just as I please. I'll start just when I please and stop just when and where I please; and I, if I choose to make, by my rates, St Louis as near New York as Cincinnati, that's my own business; and if I choose to kill a town or community or manufactory by exorbitant charges, that's my business, and if I choose to favor my friends by giving them passes and rebates, that too is my business."

All of the above claims are one-sided and destructive of government and civilization.

The farmer, all admit, has grievances that must and shall be righted, but he must not do wrong to right this wrong. Two wrongs do not make one right. Neither will an infinite number of wrongs make one right.

If the other factors have grievances, they are not chargeable to want of governmental care or because the laws have been oppressive, for they have for the last half-century had control of law making in state and nation. I now point to a single example—the tariff. No tariff law has been enacted in the last thirty years in which the manufacturer has not had, as compared with the farmer, double and treble, and in many cases, more protection than the law afforded.

Part of this discrimination arises from the necessity of the case and part from the desire to take care of No. 1. As to the common carrier, while all must admit his importance as a producer, yet, his arrogant claims must be modified and he, in common with all others, be made subservient to laws wisely and judiciously administered. Much advance has been made of late years in the direction of checking the arrogant claims of the railroad, express and telegraph companies, but much is yet to be done.

But there are other producers beside those who produce food and clothing, and carry these productions wherever needed. "Man does not live by bread alone;" he has a higher nature that craves intellectual and spiritual food almost as imperatively as the lower nature craves its food. As much as the *soul* is greater than the *body*; as much as the *diamond* is more precious than the *setting*; as much as the *jewel* is more precious than the *casket*, so much is he who furnishes this higher food above him who furnishes the lower.

Thus, the school teacher is a producer. He takes the barren, uncultivated field of the mind and by his skill in developing and cultivating, makes it bring forth a bounteous crop of ideas and thoughts.

Respect and honor your teachers, for next to the parent their influence is second to none in moulding the character and destiny of the coming millions that are to inhabit this continent. From these schools are to come the future Clays and Websters, and Bentons and Gradys, and Lincolns and Thurmans, and Gladstones. From these also, will come the future Longfellowes and Whittiers, and Lowells and Talmages, and Williards. I give you a chain and we will plant one end here in this country, but who will count its widening and multiplying links, or find its end? A good teacher makes good scholars, good scholars marry good scholars; they see that their children are good scholars, and they again marry good scholars, and so on *infinitum*. Who will measure the production of that first teacher? The teacher, like the farmer, has silent partners that do not always keep silent. The board and the parents are indispensable in the prosecution of this work, but I have been reliably informed, that in counties away off from here, they let the teacher "alone in his glory;" [I would not even intimate that any parent or member of the board here are so unmindful of duty

as not to visit the school and encourage the teacher in every possible manner.] Then, there are those other silent partners, the rod and Madam Gossip, that always furnish a liberal share of their help. If he is a producer who makes two blades of grass grow where only one grew before, then surely he who fashions and polishes the immortal mind and starts it on an eternal journey of discovery and development, is a producer.

But the class of teachers needed to accomplish this work are men of the positive kind—men who have intelligent opinions and the courage of their convictions, and not like the teacher of whom I heard. He applied to a board of directors for a certain school. Before employing him, they wanted his opinion on a subject that had been a good deal discussed during the last term. He thought he could comply with almost any reasonable conditions. They wanted to know “whether he would teach the world *round* or *flat*.” He replied that “he had given that subject a good deal of attention and he was prepared to teach it either *round* or *flat*.”

So, also, is the college professor a producer. He takes the half-polished diamonds of our common and graded schools and finishes and polishes them and fits them for the very highest production in the highest walks of life.

The minister is a producer. He not only helps us in the production of that which supports the lower life by giving us faith, courage, hope and patience, but he helps us gather in food for our higher natures. He points us to the object and end of our labors, shows us our position in the scale of existence and helps us to see and get good from seeming ill. He nurtures the seeds of faith and hope and love implanted in our hearts until they grow and expand and bear abundant crops of blessings for ourselves and for all others of the race. The seeds thus planted are fragrant as they bloom, beautiful as they ripen, and when fully matured, we are conformed and transformed into the image of the Christ. Then, and only then, does life, with all its capabilities and possibilities, begin.

“’Tis *life*, not death, for which we pant,
 ’Tis *life* whereof our nerves are scant,
 More *life* and *fuller* that we want.”

The physician is a producer. He teaches man to know himself and the laws of his being, how to preserve his health and lengthen his life, and by his skill, when we are sick, restores to health and happiness again.

In our multiplied interests we need a knowledge of law. Our self-interest blinds us so we can not see impartially the result of our actions on others and on society, and we need the lawyer to teach us the extent and limit of our right. Then we need the lawyer as a kind of escape-pipe for our surplus cash. If any of my auditors have had any experience in this direction, they know how quickly this escape-pipe will empty the largest pocket-book. Men generally, and especially farmers, when they get into a lawsuit, are about as unreasonable as the old lady when she had crossed a bridge and learned that it was an unsafe bridge, crossed right back over it again. She said she would not go on unsafe bridges.

The editor is a producer, when he gives us thoughts and ideas about the discoveries and inventions in the arts and sciences, and keeps before us the news and political movements of the world; thus educating us in the science of government. The press, in distributing literature and knowledge over the world, is to the higher nature what commerce is to the lower nature. Then, too, we need the press to tell about St. Jacob's oil, Mrs. Dr. Harkey and Lydia Pinkham. Did you ever think how soon we would all die if we were allowed for a single week to forget these great philanthropists? But for the editor we might never have heard of Hirshburgh and Rottenburgh, and Reinhaumer and Thalheimer, and Openheimer and Gundersheimer and other distinguished gentlemen.

Then we need the editor to dip his pen in gall and "lampoon" the other fellow, who has crossed his path; if for nothing else, as an awful example of how splendid talents may be prostituted. If an average political editor would calmly sit down two or three weeks after an exciting election and read some of his editorial efforts pending the election, in which he knowingly misrepresented and traduced the candidates and principles of the opposite party, I believe he would go out to the woods and kick himself till he would vow never to tell another lie as long as he lived. Seriously, is not the licentiousness of the press one of the evils of our times? If to this be added that it is too often the rest of the year a sluice-way for all the filth and murder, and rape and escapades, etc., the picture begins to look dark. But let us put the blame where it belongs—we demand such literature, and they only supply the demand.

Books are producers; in them we hold converse with the good and great of all ages and times. By precept and example they lead us along the rugged ways of life, showing us the pitfalls on either hand, and show us how to climb the ladder that leads to usefulness and fame. Let us, however, remember that,

"We rise by things that are under our feet,
By what we have mastered of good and gain,
By the pride deposed and the passion slain,
And the vanquished ills we hourly meet."

"Heaven is not reached by a single bound,
But we build the ladder by which we rise
From the lowly earth to the vaulted skies,
And we mount to its summit, round by round."

But there are *books* and *books*. Solomon must have looked forward to this time when he wrote, "Of making many books there is no end." Just think of it; 80,000 books issued every day of the year in Europe and America.

Of these a small per cent. is for specialists alone; another small per cent. are good, useful, and elevating and pure, and lift us to higher levels, and the majority per cent. are weak, thin, trashy novels, that give untrue pictures of life and ignore all its realities and duties. Don't understand me as condemning all works of fiction. Such books as "Ben Hur," and many others will live and be read as long as the Bible is read or the Christ worshipped. In short, all useful trades and professions and books are producers, whether they minister to our higher or lower nature.

But the producer supposes non-producers, and who are the non-producers? The lazy man belongs to this class; for while the industrious man produces the strawberry and the peach and the blue grass, the lazy man lets the blackberry and the wild carrot and the scrub produce and reproduce themselves.

The world has no use for lazy men in any department of its enterprises. Have you not noticed that it is always the busy man in a lower station that is called to a higher station? Did you ever hear of a man being called to a higher station simply because he was doing nothing? No, the call "come up higher" always comes to busy hands and feet and brains. Besides those who are not usefully employed are generally wickedly employed. "Satan always has work for idle hands to do." Whittling store-boxes, gossiping, retailing scandal, betting, gambling, swearing, Sabbath-breaking, and the saloon, all seem to be connected, and the lazy man is on friendly terms with these occupations at each step, but has no friendship with the soil. The soil is often spoken of as the friendly soil, and I think this adjective well chosen, for have you not noticed that the more you "strike" it and "stir it," and fling unpleasant odors in its face in the form of fertilizers and phosphates, the more it gives you in return of its hidden treasures.

The lazy man never cultivates this friendship with the soil. He is a consumer of more than he produces, and this leaves the world the poorer by the difference

between his consumption and production. If society would apply Paul's theory, "that he who does not work should not eat," it is believed that the number of non-producers would materially decrease, if not disappear altogether.

An Irishman was showing a tourist over Ireland and expatiating on the beauty of hill and glen and moor, and closed by saying that there were 100,000 men ready at a moment's notice to take up arms and free Ireland from the British yoke. The tourist ventured to ask "why don't they do it then"? "Be Jabers," said Pat, "the police won't let them."

For a much less persuasive reason many men are not producers, but are drones in the world's busy hive, and should be treated as heroically as the bee treats the drones of its colony.

Then there is the dude and the dudee or the dudess, or what is the feminine of dude. Come to think of it, they are both neuter gender. It produces nothing but canes and mustaches and curls and bows, etc. Wears out the streets and its pants and its mother, and finally evaporates and is heard of no more forever.

THE OLD DECANter.

There was an old decanter,
and its mouth was gaping
wide; the rosy wine had
ebbed away and left its
crystal side; and the
wind went hum-
ming, humming; up
and down the sides it
flew, and through its reed-
like hollow neck, the wildest
notes it blew. I placed it in the
window where the blast was blow-
ing free, and fancied that its pale
mouth sang the queerest strains to me.
"They tell me — puny conquerors! the
plague has slain his ten, and war his hun-
dred thousand of the very best of men; but
I," 'twas thus the bottle spoke, "but I have con-
quered more than all your famous conquerors, so
feared and famed of yore. Then come ye youths
and maidens all, come drink from out my cup,
the beverage that dulls the brains and burns
the spirits up; that puts to shame your con-
querors that slay their scores below, for
this has deluged millions with the lava
tide of woe. Though in the path of
battle darkest waves of blood may
roll; yet while I killed the body,
I have damned the very soul.
The cholera, the plagues, the
sword, such ruin never wrought,
as I in mirth or malice on the
innocent have brought, and still I
breathe upon them and they shrink
before my breath, and year by year my
thousands tread the dismal road of death."

The saloon is a non-producer of any thing good, and a prolific producer of all that is bad and useless. It is the great American simoon that is constantly sweeping over this fair land of ours, withering the hopes, blighting the prospects, and blasting the happiness of untold millions. It is a parasite on the body-politic, and sucks the blood of every producer. The \$900,000,000 annually spent for intoxicants are wasted, and worse than wasted. It not only draws millions from profitable production, but it destroys the profitable productions of other millions. And what is worse, we are partners to this waste. Our country and State, for a paltry sum, give men the legal right to produce this waste, and thus we are silent partners in the saloon.

The whole world revolted a few centuries ago at the church for selling indulgences to sin, and the reason given was that the heart was so perverse that it would sin any how, and the church might as well have some profit on it as not; and to quiet conscience they used the money in extending missions and building cathedrals, etc. For a much lower reason is the indulgence granted the saloon. It should be abolished as a non-producer. If you ask me for a remedy, I frankly confess I can not give one that will change the condition or be practically better. I state the condition as I see it; you should seek the remedy.

All kinds of gambling and all games of chance are non-producers. This is true of the many, but, by the country boy for the first time on the County Agricultural "horse trot" and the fortune wheel, and games of chance all along up to the stock gambling of the Board of Trade, where they sell 100 possible bushels of grain for each actual bushel sold, and the giant Louisiana Lottery Company, now being strangled to death by an all powerful public sentiment. The striker, the nihilist, the anarchist, the communist, are all non-producers and worse, they destroy the productions of honest producers. You are a producer of something useful and you save your productions. These classes say in effect to you, "I produce very little, and what I do produce I spend in sin, but you must stand up and divide with me."

For cool impudence and supreme arrogance these classes take the prize. With all these non-producers abolished and every worthless novel changed to a seed catalogue, and every street loafer to a profitable producer, the earth will bloom like the "rose of Sharon" and be fragrant as the "lily of the valley."

SUCCESS VS. FAILURE—WHY SOME SUCCEED WHILE OTHERS FAIL.

By GEORGE W. WHIP, CENTREVILLE, O.

The same general principles that attend success or failure in other avenues of life are applicable to the farmer.

The merchant, mechanic or farmer if he would succeed must make use of methods and habits that insure success; and that all may succeed there is no question.

In the old Grecian races one only by any possible means could win the prize, but in the race of human life there is no limiting of the prizes to be won. All may succeed, providing, however, the right methods are used.

The greatest mistake is that young men start out without any course marked out to pursue, but commit themselves blindly to circumstances. Is it any wonder then that those who aim at nothing accomplish nothing in life? They all expect to succeed, but they put forth little effort, living for the day only, consequently reap a reward accordingly.

Those who *do* succeed are credited with *luck*, but there is no luck about it—it is almost as certain as the rule of three. The young man who succeeds is he who masters his business, who lives within his income, who saves his spare money, who preserves

his reputation, and who devotes his leisure hours in acquiring knowledge pertaining to his business.

Carlyle says, "Man, know thy work, then do it." Circumstances don't make the man. Whether a man is conditioned high or low, in the city or on the farm, "If he will, he will." "They can who think they can." "Wishes fail, wills prevail." Labor is luck.

Some are like sticks drifted whither the tide takes them. Any one can drift, but it takes a man to stem an unfavorable current. We are what we make ourselves.

A little boy was asked who made him. His reply was, "God made me so long and I grewed the rest."

Garfield once said, "If the power to do hard work is not talent it is the best possible substitute for it." Things don't turn up in this world until some one turns them up. A pound of pluck is worth a ton of luck. Luck is a false light; you may follow it to ruin but never to success.

Another essential requisite to success is concentration of power. Do we not find Michael Angelo neglecting school to copy drawings? Henry Clay learning pieces to recite in the barn or cornfield?

The man who would know one thing well must have the courage to be ignorant of a thousand other things, no matter how attractive they may be. Stick to the farm, young man, and rest assured the farm will stick to you. It is this directing your whole mind and energies at one point that brings success.

When one enters upon his calling he must work at it, if needs be, day and night, early and late, never deferring for a single hour that which can *now* be done.

Another essential requisite is *self reliance*, determination to be one's own helper, and not to look to others for support.

God never intended that strong beings should be supported by clinging to others like the ivy to the oak. God helps those who help themselves. Every young man should feel that his success depends upon himself; the exercise of his own energies rather than the patronage of others. We are born with powers and faculties capable of almost every thing, but it is the exercise of these powers and faculties that give us ability in any thing. The best capital with which a young man can start in life, is robust health, good morals, fair ability and an *iron will*.

A vast majority of our great men started life with these qualifications, and none other.

The greatest heroes in battle, the greatest orators, ancient or modern, were sons of obscure parents.

The most signal success ever attained on earth was the result of self effort.

The oak that stands alone to contend with the tempest's blast only takes root deeper and stands the firmer for ensuing conflicts.

Another essential requisite is *economy of time*. Franklin said, "Dost thou love life?" "Then do not squander time, for that is the stuff life is made of." We know how Franklin used his time. Born the son of a soap boiler; lived to become one of our most noted philosophers; died worth thousands. Advice from such men as Franklin carries conviction.

Gladstone, England's most noted Premier says: "Believe me when I tell you that thrift of time will repay you in after life with usury, but the waste of it will make you dwindle away until you fairly sink out of existence unknown and unmourned."

Elihu Burritt says: "It is not genius that wins, but hard work and a pure life." At sixty-eight he died honored by two hemispheres.

Study the lives of such men as Douglass, Lincoln, Grant, Garfield, Blaine and Cleveland, and you will find that by the use of every available minute, they have been enabled to rise to influence and power. An hour every day for ten years will transform any one of ordinary ability from ignorance to learning.

Lost wealth can be replaced by industry, lost health by hygiene, but lost time is gone forever. It is easier for an over-worked man to do a little more than for a lazy

one to get up steam. The busy man succeeds while others are yawning and stretching, getting their eyes open. He will see the opportunity and improve it.

Complain not that you have no leisure, rather be thankful that you are not cursed with it. Think of the young man lounging or going to some vile place of amusement to kill time, then think of that young man utilizing that hour every night in the acquisition of knowledge which will fit him for life. Leisure is too often like a two-edged sword, it cuts both ways.

We have *success* as the result of concentration of effort, self reliance, economy of time and money.

Among the causes of failure we find: The excessive haste to become rich is the most frequent cause of failure, as this leads to speculation outside our legitimate calling.

I have in mind a gentleman of Southern Illinois, whom I met some time since, a most successful farmer, and because of his success on the farm, supposed he would be equally successful in any venture. He therefore dealt largely in futures, and came off short \$100,000. This cooled him, as indeed it would the average farmer.

We certainly would not oppose making ventures in our own line of business on the farm, but avoid all outside speculation.

Another source of failure is indorsing, without being in some way secured. How many farms are sold by the sheriff because the owner indorsed his neighbor's paper! How many homes that are now broken up, that once were happy and knew no want, because the husband lost all through security debts! All this can be avoided by saying *no*. You will not only save yourself, your family and your home, but probably will keep your neighbor from entering some disastrous speculation and save him.

Another frequent cause of failure is *the neglect of the farm*. We see this demonstrated by riding through the country. Farm machinery all out in the weather, barns leaking, and every thing in a tumble-down condition, weeds growing where grain or grass should grow.

A man will attend to the farm in proportion to the amount of interest he has in farming.

AGRICULTURAL PROGRESS.

By J. R. WOODWARD, OF MILTON.

By agricultural progress we mean the advancement in agricultural knowledge to a state of proficiency in that science; and also the enjoyment of all the emoluments that pertain to a higher state of agricultural existence. To obtain that desideratum, and to treat of some of the hindrances that stand in the pathway to success, is the object of this paper.

This is an age of progress. All departments of the scientific world as well as the trades and professions are alert and watchful, yes, ready to take hold of any opportunity that may exist to advance their intellectual, social and pecuniary interests. Why then should the farmer stand idly by and not seize the opportunities that present themselves to him, that he may enjoy the full fruition of his labor commensurate with the investments he makes and the ability he bestows upon them?

Let us look at these professions: A young man, say of moderate means, of no particular scholarship, without any record for brilliancy, concludes to enter the medical profession. He enters some medical college and in a score of months takes his degree, has M. D. attached to his name, hangs out his shingle and in a majority of

cases is in possession of a lucrative practice, enjoying an income far in excess of his more intelligent brother on the farm. In his medical development he has had access to all the medical authorities from the most remote times. Surgical skill has been imparted to him by the most learned experts, thereby making his knowledge of the intricacies of the human system comparatively easy to obtain. An outlay of probably five hundred to one thousand dollars has been sufficient to set this young man up in practice with an income before mentioned. Nor is it to the medical profession alone that we wish to refer. As with it, so is it with the legal and ministerial. A short time devoted to study by apt scholars with the advantages that colleges, universities and libraries endow, makes it comparatively easy for any one who may choose either. Nor is the practice of any of the professions so laborious, either in a physical or intellectual sense. The doctor works by rule. The laws of diagnosis are well nigh immutable, and point as indexes to certain specifics, and medical etiquette and jurisprudence are rigidly adhered to.

The lawyer is aided in his work by the decisions of the courts back to the time of the Norman conquest, covering innumerable cases of every description, compiled and indexed. He is aided largely by blank forms, provided to avoid the mistakes and technicalities in law; and so on through all the category of the professions we find them aided by the successes or mistakes of predecessors.

Now let us look at the brother on the farm. Let us suppose him to possess a mind equally as brilliant as the brothers in the professions; let us suppose his scholarly attainments the same. He chooses to become a farmer. If he buys a farm of half the average size it will cost him double what his brother has spent fitting himself for a profession. Unfortunately for him there is no set law for him to follow to success; the conditions that confront him at one time are not the conditions that obtain at another. The climatic influences that surround him this year may be far different next. Just what to plant and how to plant it can not be determined accurately from the experience of others. The location, the variety of soils, the condition of the weather, all combine to draw upon him for the exercise of good judgment, combined with a knowledge of the habits of both plants and beasts. Confronted then with the many obstacles that lie across his pathway to success, upon which he has to exercise his mental powers, he also finds entertainment for all his physical powers. For

"If by the plow one should thrive,
Himself either must hold or drive."

This trite saying of Franklin has lost none of its potency since the author's death, one hundred years ago, and if a farmer of to-day wishes to be successful, even in a measure, he must draw upon himself for an endless amount of toil.

We have made these comparisons thus far with the professions only. Let us now look at the trades. Our carpenters and masons, and, indeed, all skilled labor, is finding ready employment at a higher round of wages than was ever obtained before. Masons are asking and getting 40 cents per hour; carpenters are receiving \$2.75 per diem, even if their knowledge of the trade be confined to hammer and saw. Skilled labor in all departments of manufactures is receiving from \$2.00 to \$20.00 per day. In fact, a prominent manufacturer of Youngstown stated to the writer a few days ago that in all his experience of fifty years he had never known wages of all kinds to be so high and agricultural products so low. It is evident, then, with the wages just mentioned, that the gross income these artisans receive is greater than the average farmer's, with an investment of \$5,000 in land.

We might go on and make these comparisons further, but only to the end that the proof to be adduced would convince any reasonable person that the remuneration a farmer receives is the poorest in all the occupations of life. Then, when he shall have gotten out of the conditions that now surround him and stands upon a plane with those who have invested in other enterprises, and receives a just recom-

pense for his labor in accordance with the ability he bestows upon it, will our ideal of agricultural progress be attained, for the time being, at least.

One of the chief difficulties to be overcome is that of overproduction; when producers produce more than consumers consume, prices must necessarily be low. This is just as true among manufacturing interests as with the commodities of the farm; this is well understood among the iron producers who, by a system of associations, shut down the output of furnaces and rolling-mills when their products are in excess, until such time as the market will take up their surplus. By so doing they are always running their plants at a profit.

Unfortunately for the farmers of this country, their immense number, their isolation, their want of data, their dependence upon climatic conditions and many other circumstances, all conspire to render any thing like a systematic reduction in the output of the farm both futile and inoperative.

We are among those who believe that our misfortunes in this direction were caused by the misguided zeal on the part of the legislative and executive branch of our government in an attempt to develop the agricultural resources of our country faster than the consuming power could take them up and absorb them. We believe that same power should be called upon to cease their efforts in this direction, and to seek an output or a market for our great aggregation of products.

Shortly after the late war Congress voted large grants of public lands, consisting of many millions of acres, to the Union Pacific and Central Pacific railroads, which reaches from Omaha to San Francisco. This in itself was probably justifiable, as the undertaking at that time was a great one as well as extremely hazardous. But it proved to be the entering wedge by which one corporation after another have importuned the government and have secured to themselves large tracts of superb agricultural lands lying contiguous to their line of railroad. With these lands in their possession, they send their agents throughout Europe, soliciting immigrants to settle upon them, with that success that is so startling and apparent to us all. Coupled with this reckless extravagance of our public domain, the government in itself has, in our opinion, been over-generous in its homestead and pre-emption laws. So much so that by the inducements so held out many that were engaged in the trades and professions, yes, many people of wealth even, eager to grasp at the hope of bettering their condition have left good occupations of all kinds to become poor farmers in the West, struggling with the adversities that surround them, and of which they are kept so wantonly in ignorance until too late. We should also consider the vast improvement in all kinds of farm machinery operated on lands that are not only rich in all the elements of plant food but admit of easy cultivation. All these things combined have tended to produce such an enormous output that has grown much faster than the limited markets that we now have is able to control. This immense product must be sold somewhere. Having no market of their own, they are enabled by reason of cheap rates to enter and compete in markets which by natural contact should belong to others. Thus, by trying to sell two bushels where but one is needed, we have succeeded in selling the two bushels for the price of one. And to-day, were it not for the distress and misfortunes consequent upon the failure of crops in Europe, and which are so apparent to all the world, our great surplus of 240,000,000 bushels of wheat would be lying in our granaries, cutting no figure as a wealth-producing power. In my opinion the remedy lies largely in political action. Our legislative and executive branches of government, composed and elected as they are, can not reject our appeals if couched in respectful terms and upon reasonable grounds. We should ask that the causes which have produced this state of things, if not wholly obliterated, should at least be allayed, and while it might not be wise or prudent to dispense entirely with the inducement that brings foreigners here, we

think it not unreasonable to insist that they shall be endowed with habits of industry and with a character above suspicion. * * * *

Then again, we are threatened with a deluge of bills before Congress, asking appropriations for establishing and carrying on a system of irrigation so as to bring into market millions of acres of lands that are otherwise unavailable, thus increasing their burdens on one hand and lessening their ability to pay upon the other. It seems that our duty as well as interest lies in an opposite direction and we should oppose any and all schemes that increase production to an extent that is abnormal. Having put our influence at work against over-production, we next should demand a wider market. We think that all farmers should appreciate the efforts that have been put forth in this direction during the last year, but as yet so recently affected that their effect has not been made apparent upon our markets. This brings us to another branch of our subject, which is

COMMERCIAL HONESTY.

What we want is a national awakening to the moral that "Honesty is the best policy," even in dealing with people of different nationalities, even if the ocean divides them. If we sell lard, let it be lard, and not a conglomeration of fatty degeneracies which accumulate in and around the great slaughter houses of the West, mixed with cotton seed oil. If we sell butter, let it be butter, and not a nauseous compound composed of tallow and lard. In short, let us put a premium upon honesty by making these dishonest practices criminal, and let our out-going products bear the certificate of the general government as to their purity. For if we do not surround our shipments with some such guarantee we can but expect that the restrictions that have been so lately laid aside will be so but temporarily.

GAMBLING IN FUTURES.

A twin evil to this practice of defrauding the innocent, is the gambling in futures of the price of grain and other products of the farm. In later years there has sprung up in this country an army of men systematically organized and with capital unlimited, possessing all the ability that money can command, whose business it is to depress prices while yet in farmers' hands, and thus, when getting a controlling influence in the markets, they turn upon the consumer with the same systematic exertions, thus acting like an octopus upon the free delivery of produce from the farm to the consumer. They are of the class that toil not. They produce nothing and consume but little. There is no excuse for their existence. Their gains represent the sweat of toiling millions. They stand as a damning influence over honest industry, leading it from the paths of virtue into its hells of vice and carrying many of its victims to suicide and death. Then why not make what is criminal in morals criminal in law?

This evil is so apparent that it needs no further elucidation at our hands. But to cast our influence to its abolishment is the duty of all right thinking men.

DEBT.

Again, another impediment to success in our avocation is debt. We are not averse to one going in debt, provided its liquidation is not a matter of doubt; in fact it is better for some people to be in debt than otherwise. For if they know they have payments to meet it will arouse their latent energies, give more play for the development of their minds as well as their farms, and keep them from idle habits. But on the other hand they must remember if their payments are large they have no positive assurance that they can meet them.

The laborer works for so much per day and he knows how much of this he can use for paying debts. They who work on salary know when it is due and how many bills it will pay, and so on. But the farmer has no such command on his resources. Although his prospects may be brilliant, yet frost and drouths and insects, and a multitude of misfortunes may combine to make them a failure. And then, if in close circumstances, he is obliged to market his crops often when the prices do not justify their sale, simply to meet the demand of his creditors. And then, failing to meet them, he is obliged to deny himself and family the luxuries (and sometimes the necessities) of life, and oft-times fails to meet the demand that religion and society have upon him. Far better to keep near the shore than to trust to the rocks and breakers of an unknown future, sailing without chart and compass.

We have mentioned these matters because they appear to us to associate themselves with the politics of the times and demand from the farmers of this nation their serious attention. That the matters mentioned are deleterious to the interests of the farmer admits of no doubt, and that they should be united upon some policy to pursue is the only course of action. Our individual opinion is that we should follow the same line of action that merchants, manufacturing and all other interests pursue in ingrafting upon the statutes of our state and nation such legislation as our interests demand, when based upon conclusions that are both reasonable and just.

THE PRIDE OF THE FARM.

BY WILL H. EVANS, EATON, O.

Farming is not a game of chance. Nothing grows by chance. No, not even the weeds. Neither does a crop grow in a day. Growth requires time and is gradual. And to have the best results must be watched and aided from day to day until the harvest. If we want results we must wait. This is one rule of the farm. No farmer has ever been able yet to ripen his wheat a month before the time. This does not apply to wheat only, but to all products alike, animal as well as plant. This is most emphatically the case with our boys and girls. They require time to grow, and he who claims to grow a full, round man, either physically, intellectually, morally, or spiritually, in less time than nature permits, is an impostor and a fraud. There is only one person competent to oversee the growing of any product of the farm. It is the very poorest of economy to place an incompetent person to growing any thing. Where is the farmer who would trust the raising of his hogs to a young city dude who has never seen a hog except on market, or rooting in the fields at a distance when traveling along the public highways? Or show me the wide-awake farmer who has studied and is versed in the subject of fertilizers, and I will show you the farmer who will not leave the fertilizing of his farm to one ignorant of the first principles of the subject. And yet we seem indifferent about who oversees the growth of our boys and girls. The farmer who knows his business, and wants to make the most of his efforts, is alert and wide awake to take advantage of every thing that will promote the welfare of that effort. It is right that he should be interested to the utmost in each and every product that he attempts to produce. And far, far above all others he should be deeply interested in the raising of his children.

The farmer who does not try to educate himself in the work of his chosen profession should be admonished by his neighbors. If he is trying to keep abreast of the times by a routine method that his father and grandfather used, and contents himself with no advancement, assuming that he can not be taught, spending no time attending these institutes, or reading even a paper, he is the subject of pity, and if he happen to have children, what of them? Are they not to be pitied? This farmer

is like a blind man on the bank of a river, safe while all is still, but if he moves, he is in imminent danger. He is safe to-day, but ere to-morrow he will be elbowed out of the race, and must fail at least as a tiller of the soil. Nobody can deny that the science of agriculture is making rapid strides, and in this day of close margins and sharp competition, only he who marches abreast with it has the advantage of the future. Now, who wants his boy or girl to grow to manhood or womanhood to be elbowed out of this race. It will not do to say my boy only intends to be a farmer, and he does not need to develop as he would to be a lawyer, or a physician. So narrow some people seem to be. They can not see beyond their own barnyard. As with the development of all other boys so with yours. There is only one way; they must grow.

First, I would have them put in condition to grow physically. See to it that your boys have something to do to develop muscle. Teach them to do the endless number of things that are to be done on the farm, and have it understood that they do them right. Teach them early that "what is worth doing is worth doing well." Be careful that the kind and amount of work are suited to their age and stage of development. Teach them never to *shirk* their tasks, but to always bear their burdens manfully. Mothers, do not permit your girls to grow up to be pale faces and white hands. The laws of health apply to them as to the boys, and if they violate one of them they suffer just the same. Nature does not stop to ask to what sex you belong, but inflicts the pain or disease without regard. He is no respecter of persons. The boys and girls of our land should be taught to work. They should have plenty of it to do. It should be of the proper kind, and should be done at the proper time. However, let us remember that boys are not men, and should not be expected to follow the plow all day when the handles of the plow stand two or three inches above their ears. Keep from greediness. Overwork them not for the sake of a few dollars. Remember while they are young they may be easily ruined for life. Many a boy is stunted in life from overwork in his youth. Every parent should know the laws of physical growth, and apply them in raising their children. We study these if we would be successful stock raisers. But is it necessary in raising our children? Indeed, we should know it; it is our duty. Remember your ignorance of a very trivial affair may cause your child to carry to its grave a load of pain or disease that you would not desire to be accused of inflicting.

Most farmers need little encouragement in the amount of physical labor. They generally give enough, *but the kind*. The kind is frequently poor. It is the kind that makes all but the beautifully, manly, or womanly form of body. So much for bodily growth.

The human race is capable of a growth, the comparison of which is not found elsewhere in the whole scope of life. This is mental growth, and mental growth may be divided into three branches—intellectual growth, moral growth and spiritual growth.

The boy and girl are the paramount of products. They are the pride of our homes. Cultivate them; educate them. They *will* bring forth fruit, be it good or be it bad.

The culture of the child demands daily attention. If you stop or lose a day the weeds spring up. The cultivating should be regular, not spasmodic. Education is growth. It can not be hurried. Corn grows slowly, steadily, constantly. The child grows slowly, steadily, constantly. If the gardener is not there it grows in his absence, and often in the presence of the enemy. Remember it was in the night when the enemy came and sowed tares in the field of the farmer. It is when we are asleep that our boys and girls are being educated by the sower of weeds. You know how weeds grow. Mental weeds are the very worst sort we have to deal with. They have such long sprangling roots and their seeds are so numerous. Remember, he grows steadily. He can not be shoved along to-day at a lightning speed, to-morrow at a snail's pace. He grows every minute; whether in school or out of school, whether

at home or abroad, in good company or bad, reading good literature or trash; whether at church or in the pool room, he is growing, he is developing, he is being educated.

You are proud of him. Keep that constantly before you. You want the boy to make a man, the girl to make a woman, and they may, *but many never do*. They can, and undoubtedly will, if you give them the proper attention.

As to moral and spiritual development, I shall venture only to say, they can be nothing but growths. One does not become moral in the twinkling of an eye, no more than an ear of corn appears fully matured in the same time, and if spiritual development is not a growth it is not a development. All God's laws are gradual.

I shall now call your attention to how we may better a few of the means we are now employing in the intellectual growth of our boys and girls. We should be more particular about our schools, and especially to-day in the supervision and supplementary reading—the two weakest points in our present school system.

As to supervision, this county has no system at all. We have upwards of one hundred country schools running under their own supervision. One teacher neither knows nor cares, frequently, what his nearest neighbor is about. This is one source of our weakness. No other business is so conducted. If we can not have the whole county under one competent overseer, we should by all means have the townships graded. The law gives us this power and it would be economy to take advantage of it at once. Other counties over the State are reaping the harvest that Preble should be reaping to-day. The cost would be a trifle. At present, this township could grade its school, hire a competent superintendent of township, whose business it would be to visit schools, conduct examinations of the pupils, hold teachers' meetings once or twice a month, at which meeting he could lay out the work expected to be done and explain how it should be done, conduct graduating exercises, etc., under the guidance and direction of the township board of education, at a very nominal sum, not to exceed one hundred and fifty dollars at the utmost. It is not necessary for all townships to go to the expense of erecting township high schools at once. Where a village high school is located in the township, arrangements could be made by which the pupils graduated from the country schools might enter these high schools. If a township feels able to erect its own high school, I have no doubt that better results will be had. I would not advocate strongly, the idea of sending all country boys to the village schools. It does not injure some, but many are ruined for life in this very way. But high school or no high school, let us have order out of this chaos.

If you consider as I do, that your children are the pride of your life, you are anxious to see them properly educated. You are willing to spend both time and money to aid them in getting the best results out of the chances we have to-day.

Knowing that you do not see as you should, the need of a well selected library, I wish to call your careful consideration to this question. Pupils who can read should have at their command a carefully selected list of books, that are intended to aid in unfolding their minds. You would be surprised to notice the thirst that the boy of eight or nine years of age, in the country school, has for reading. I have noticed him look over my list of books, showing all signs of hunger. And perchance, he would find something to his taste; let him alone and he would devour the whole book before he would put it away. Does he need this food or should he be told to study his own book? Do you want to hash over the old daily or do you prefer to buy a new one? Pupils, as well as grown-up men and women, get tired of hash. Would you have your boy and girl direct their thoughts to learning—feed them? See that they have reading material. If you want your boy to spend his time in the so-called pleasures of the day, gaming, gambling, running over the country after night, taking in the town six times a week, and living there on Saturday, keep this food from him. When he is honest with you and says, I wish I had such and such a book, magazine or paper that you know is good literature, do not say, you do not

need it. He does need it, and often needs it worse than he needs his breakfast. He may crave it as many a boy has; and if he is starved in his youth he may drift off, and when you would have him read instead of idle his nights and even days away, you will be sorry to find that all appetite is gone, and too frequently gone, never to be restored. Oh, blind parent who can not see this! Open your eyes. It is a sad and lamentable mistake that our country schools do not have good, well selected libraries. Fifty dollars could not be better spent than in a library for your country school. Many a fifty has been more foolishly spent. Let some sharp agent come round with a chart, that in many cases is not worth one-fourth the price paid, and it is bought. Watch the next one and save the money to invest in a library.

Have you a library at home? If you have not, let me beg of you for the sake of your children, buy one. Make them a present of fifty dollars, which will buy a nice library of seventy-five or eighty volumes, and if you do not tell me in one year that you have been well repaid, my observations on the library question have been in vain. The library question, like the supervision, is not a matter of extravagance, but one of economy. Put in the library, whether it be at school or at home, the very best literature extant, and you will have the best results. Then, when your boys and girls grow to be men and women they will have something that money can not buy. They will appreciate what you have done for them. They will say to you, the fifty dollars you spent for us has been worth more to us than five thousand would be now. Don't be afraid to invest your money in a good library; you will get amazingly large interest.

And remember, fathers, mothers, it is far better to leave your children a good education at your death, than a large legacy. For, in the one case, they may earn the legacy and possess both education and legacy, while in the other, they, being ignorant, may lose the legacy, and have neither the legacy nor the education.

TO WHOM, HOW, WHEN, AND WHERE SHALL THE FARMER MARKET HIS PRODUCE.

By H. H. KIRK, NORTH JACKSON, MAHONING Co., O.

This is an age of revolution and evolution. It is the most marvelous age the world has ever witnessed, and nothing that has gone before can be compared to it or cited as an indication of what is to follow. We can not with any degree of accuracy predict anything for the future. We grope and fear to risk too much lest some new invention completely upsets all our plans and gives winning hand to another. We have had the age of iron; we have the age of steam; and to-day we are on the threshold of the age of electricity. Ten short years ago we wrote our letters; or if we were in a hurry, we telegraphed to our friends. To-day we call up the exchange and states are traversed by the sound of the human voice. To-day we talk in a funnel and not only are the words recorded, but the very sound and quiver of voice is faithfully preserved to be repeated as often as may be required during our lives or after death. It will only be a few short years at most when the American farmer will go out, groom and harness electricity to the plow. We stop and ask what next? The answer comes with the rapidity of lightning from some quarter of the universe in the shape of a new invention. Once we put a little oil in a saucer struck the flints together and ignited a rag for a wick. With such a light our reading and sewing were done. Then we ran the tallow into the molds and made the candle. We next ran the fluid into the lamp; and stood back in awe to see it burn. Then gas began to make its way into our cities. Then the old Drake farm was

tapped and the world was astonished to find itself burning the product of the earth. Then we said we can go no further, but found our words were contradicted by a glare of light, which almost rivaled the noonday sun; and electricity flashed itself into favor. Wonderful have been the changes wrought. A century ago, this part of the Northwest Territory was almost wholly a primeval forest, inhabited by a race of men "Who are gone with their old forests—wide and deep, and we have built our houses upon the fields where their generations sleep." Less than a generation ago the farmers, in this part of northeastern Ohio, by the slow and laborious methods of wagoning the products of their farms to Pittsburg or Cleveland, and disposing of them there and return, required several days, which is now accomplished in as many hours by our improved and modern system of transportation. Truly our whole industrial system in a few decades has been revolutionized and evolutionized to such an extent that we pause to consider. Permit us to direct your attention to the past and present condition and history of where the farmer has found and is finding a market for the surplus products of the farm. The foregoing proposition is so broad and comprehensive in its bearing that we are at a loss to know where it shall begin and what shall be its ultimatum. The American farmer has reached a point of proficiency in production that is astonishing the world. We are able to produce wheat in vast areas of our country; virgin tillage; and by our improved methods of harvesting, etc., at a maximum cost of production of 40c. per bushel we may be able to maintain and increase the fertility of our soil until the capabilities of an acre would be 50 bushels of wheat; 100 bushels shelled corn and 900 bushels of potatoes; after we have garnered these immense yields of products, the work of the practical farmer is barely half completed. The farmer of to-day plows, plants, cultivates and gathers his crops as did his farm ancestor before him; but the *methods* he employs have been the evolution; caused by the invention and application of machinery to every line and branch of farm operation; and the farmer of to-day, in whatever line of farming he may be engaged, produces two general classes of farm products as did his farmer ancestors before him, and universally classified as such by all shades and opinions of farm and political economists of the day, viz: Raw products and finished products. Strange as it may seem, with the aid of labor saving machinery and inventions and discoveries in all these lines and directions for the use of the farmer, and the wonderful increase in production by these means; that in direct proportion as the number of finished products of the farm have decreased the number of rude or unfinished products have increased when ready to pass out of his hands as a commodity of production. This change has not been a sudden or unusual one when placed in comparison with other radical changes that have been brought about in which the farmer forms a very important link in the chain of our industrial system. The causes of which, we will not stop here to consider. Rude and not finished products, we are sorry to say form a very large proportion and much larger than that of fifty, yes, *twenty-five* years ago, when the spinning wheel and loom converted the flax and wool into home-span and the lumber for the house and barn was taken from the adjoining woods, and the farmer carried his grain to the neighborhood mill and brought home flour and meal. To-day nearly three-fourths of the market value of products produced upon the farm are rude and unfinished and must pass through many changes as well as hands in course of their manufacture before they are fitted for the use of the consumer as placed on the market.

Take a pound of wool as it was produced and used by the farmer fifty years ago, a finished and complete product, and contrast it with the pound of wool produced and marketed by the Ohio farmer of 1891. From June, 1890, to June, 1891, he keeps a flock which he carefully guards and tends for a year. The farmer shears his flock, ties up the wool and sells to the local dealer at an average price of 32 cents per pound. This local dealer, who has bought on commission, forwards it to the commission house in Cleveland, who, in turn, sells to a dealer in Boston or Philadelphia. The

wool is now purchased by the factory, possibly located in the New England States, Ohio or Pennsylvania, and put through the various stages of manufacture until it comes out a finished product, however, only in part. This partially finished product is sold to the wholesaler, and by means of commercial travelers, it is sold to the jobber. The jobber sends out his army of commercial travelers and sells to the local dealer, who, in turn, sells back to the producer of the raw product. This pound of wool has had seven different ownerships since it left the hands of the producer, and has passed through not less than two hundred hands, and will have the eighth ownership in the farmer who produced it, if he is fortunate enough, financially, to be in a position to pay the cost, exchange, transportation, manufacture and government tax added to \$1.50 per pound for red flannels, or \$2.40 per pound for the best grades of worsted; but the average farmer of 1891 don't find it expedient to indulge in these luxuries, but chooses in their stead a cloth manufactured from cotton and wool, the former raw product furnished by his brother farmer of a more tropical climate, but with no less expense in handling through the various stages of manufacture; but it is a fiber plant and produced in so much larger quantities making it by all odds the cheaper wearing apparel, and naturally intended by Providence to be the national wearing apparel of the masses.

Taking again for an example the farmer who fifty years ago owned a hog twelve months old and weighing 800 pounds net, or a bullock three years old and weighing 1,200 pounds on foot and fat, were finished products as far as human skill and ingenuity then known could make them; were finished and complete products and ready for the shambles of the local butcher and market. Yes, twenty years ago this was the rule and not the exception. But the farmer who in 1891 has a hog weighing 800 pounds on foot and fat, or a steer weighing 1,200 pounds on foot and in prime condition, has no longer a finished product, but a rude one passing through almost as many hands and stages of its manufacture to fit it for the use of the consumer as did the pound of wool, but peculiarly different in one respect—of no government tax added to the cost for the consumer. The much talked of American hog, as well as the steer, has retrograded in the scale and class to which they formerly belonged, notwithstanding their prohibition and more recent admission to the markets of France and Germany, but have ever had a gradual growth of importance as a food supply of the world.

Let us examine into and discover, if possible, how these two important products of our farms have taken on this change, and whether it has operated to the advantage or detriment of the producer, and likewise to the consumer of these commodities as they now are in their changed condition. In the first place, this new order of things has practically set at naught the once supposed Mede-Persian laws of supply and demand as they are used in the commercial world; and one of the greatest allies to this change is the market wrecker in the hell of the pernicious option dealer "who toil not, neither do they spin," but live on the fat of the land by the sweat of the brow of others. This revolution in the manner and methods of the farmers' market has been largely brought about by the abnormal construction of railroads, subsequent combinations between these corporations and the establishment of stock yards owned by parties controlling the railroads upon whose lines these yards are located; and by these combinations have centralized our markets to such an extent that four firms in Chicago to-day are able to dictate and name the prices to the producers of hogs and steers marketed in Kansas City, New York, St. Louis, Omaha, Cincinnati, Philadelphia, Pittsburg, Baltimore, Chicago, Buffalo, or Youngstown, if they please.

Every stock-raiser who produces these commodities knows that a new order of things has been inaugurated, and he also knows that prices for these commodities have greatly depreciated in the last few years, whether he produces them in Pennsylvania or Ohio, Illinois or Montana, or whatever methods he may employ in their production, or the number produced. The consumer buys and pays for his meat as he did years before, caring little where, how and by whom produced. He may cas-

ually notice the handsome boxes of surloin marked Nelson, Morris & Co., Chicago, Ill., or the choice sides of beef, tagged P. D. Armour & Co., of the same place, but gives it no further thought. He buys and pays for it because it is good, wholesome food. Every stock-raiser knows this is the state of affairs; but what has brought about this change of affairs is but very improperly understood by the producers of these commodities. Perhaps some auditor might say, "Overproduction;" but to set that argument on its right footing, we say, and ample statistics bear us out, that the world's supply of food was on the decline before this change began, and the laws of supply and demand, as set at naught, were practically illustrated by the marketing 1891 cereal crops in this country—one of the largest ever produced. Only two-thirds of a crop in central and southern Europe, and an entire failure in the northwest, while many millions of her people are in a state almost of utter starvation. No, it is not the laws of supply and demand that have brought this wonderful change, but a law ten thousand times more far-reaching in its results. Mr. Rockefeller, king of standard oil, blazed this path through the forest of thought and made this step possible, and once blazed out and traveled, it has been readily found by others. There was a time when a hundred towns and villages were bounding forward in enterprise and thrift, responsive to music of machinery for refining oil. Railroads were being projected to every new field as soon as discovered. These refineries gave employment to hundreds and thousands of hands, and the carrying trade promised to be enormous. One morning those employed in and dependent upon this industry woke up to find their occupation gone. Rockefeller, for his Standard Oil Company, had obtained from the Pennsylvania legislature the exclusive chartered right to lay pipe lines to the oil fields, so the oil could all be pumped from the wells to Cleveland, and the devastating armies of ancient or modern wars would not have more effectually destroyed the towns and railroads in the oil regions. All competition in the oil trade was swept away, making it absolutely impossible to compete. The producers of the American hog and steer are slowly waking up to the idea that the profits of his occupation above the cost of production are, too, almost gone. The rapid decline in the cattle and hog market begun in 1885 are so widespread and devastating in its results that cattlemen's association of the west asked the Secretary of Agriculture and the fifty-first Congress to investigate the causes of this rapid decline. A committee of United States senators was subsequently appointed and reported upon the dressed beef combine. The report covers many points of interest, and the high standing of the committee, and the careful research and investigation given to the subject render the report of great value. The finding of the committee is declared to be not of a partial or ex parte character. We give a digest of that report: "A decline in the best grades of cattle from \$7.15 to \$5.40 per hundred, and on prime cattle \$6.05 to \$4.05 per hundred, and on range and western cattle from \$5.60 to \$3.75 per hundred, owes it to the dressed beef and what is known as the Evener combination and the centralization of the market at Chicago by railroad combination. The Evener combination was between the three great trunk lines from Chicago to New York, viz. the Pennsylvania Central (a part of the line known in this locality as the Pittsburg, Fort Wayne and Chicago), the New York Central and Erie; by which terms \$115 was charged on each car load of cattle from Chicago to New York, and \$15 per car was paid back to certain favored shippers at Chicago. This combination lasted from 1873 to 1880, and destroyed the St. Louis cattle market, which was in a flourishing condition when this combination went into effect. This is shown in the cattle receipts at Chicago and St. Louis in 1888. The stock yards at Chicago received 2,611,543 and 96,086 calves, while the St. Louis stock yards received 453,918 cattle of all grades. The receipts at the Chicago stock yards in 1872 were 684,075. The gains of over 2,000,000 in six years shows the centralizing effect of the Evener combine. The committee says some idea of the immense profit to the parties in the combine may be gathered from the fact 4,000,000 cattle were shipped to New York from 1872 to

1880." It was in 1885 that the first shipment of dressed beef of any considerable amount was made from Chicago to New York, and the Evener combination came to an end just as the dressed beef business began to assume large proportions. The previous centralization of the market placed Chicago at the head of the business, and of the nearly 23,000,000 cattle received at Chicago from 1878 to 1889 about 14,000,000 millions, or 60 %, were consumed at Chicago in the butcher shops, canning and dressed beef establishments; 68 % of the immense receipts received in 1889 were consumed in this manner.

The immensity of the dressed beef business may be gathered from the fact that of the two millions cattle slaughtered at Chicago in 1889, the greater per cent. went into dressed and canned meat. At the head of this gigantic business, and controlling it, are the firms Hammond & Co., Armour & Co., Swift & Co., and Nelson, Morris & Co. The control of so great a business by so few men brought about a combination not to compete. The committee are of the opinion that this has been and is the cause of low prices, and they sum up the combination as follows:

"First. It is admitted that they combined to fix the price of beef to the purchaser and consumer, so as to keep up the cost in their own interest.

"Second. It is admitted that they have an agreement not to interfere with each other in certain markets and localities in the sale of their meats.

"Third. They acted together in supplying meat to the Soldiers' Home, Hampton, Va., National Soldiers' Home, Milwaukee, Wis., and the National Hospital, Washington, D. C., the bid for the contract being made by one, and the meats then being supplied by each of the dressed beef firms alternately for stated periods.

"Fourth. They combined in opening shops and underselling butchers of cattle at Detroit, Mich., and Pittsburg, and other places in Pennsylvania and Ohio.

"Fifth. They refused to sell any meat to butchers at Washington, D. C., because the butchers had bid against them for contracts to supply with meat the Government institutions in the District of Columbia.

"Sixth. They acted together at Chicago in refusing to come before the committee as witnesses, and in preventing their employes and agents from coming, it being an open secret that they met together with their counsel and agreed as to their action.

"Seventh. By the terms of the agreement made between the parties of this combine a percentage of hogs or cattle to be killed by each house was fixed, and any establishment killing more than such percentage would pay so much upon each hog or steer killed over the ratio to the parties killing less.

"The committee charge a direct complicity on the part of the railways, and back up the charge in matter of discrimination practiced in the matter of mileage allowed the dressed beef men. The palace cattle cars are coming into general use for reasons that are obvious. Up to 1888, the Trunk Line Association (which embraces all the roads running from Chicago to New York), allowed the usual three-quarter cents per mile each way rent upon these cars shipped over their lines, that being the rent allowed all companies for the use of cars. In May, 1888, the Trunk Line Association refused longer to allow mileage on the palace cattle cars, while they still continue to allow beef packers, who own their own refrigerator cars, the three-quarter cents per mile each way on the much heavier and more clumsy refrigerator car. The net profit arising to the packers under this rule is \$85 annually upon each car.

"The committee say in explanation of this outrage, if the palace cattle car is allowed the same mileage as given the refrigerator car, there would be very few cattle unloaded at the stock yards, and no profits would there accrue by reason of the exorbitant charges there collected. It is a significant fact upon all the railroads coming from the west to Chicago, mileage amounting to one and one-quarter cents per mile, is allowed upon private palace cars, but after reaching the domain of the Trunk Line Association east of Chicago, no such mileage is permitted, but on lines

east of Chicago live cattle must be shipped in the common stock cars of the railroads."

The obvious conclusion is that a combination exists between the railroads, the stock yards, and beef packers, to skin the producer of cattle at every turn, centralize and control the markets for cattle and hogs, and fix the price to the consumer of meats. P. D. Armour claimed only a net profit of \$1.22 per head upon the 840,849 cattle killed by his house in 1889, but the committee conclude his estimates are wholly unreliable. They take P. D. Armour's published price list and figure his profits on a \$25 Texas steer would be \$7.18. Hammond & Co. have recently sold to an English syndicate, and a statement of the business has been published in the London papers. From this statement it seems that one of the "Big Four" made last year profits equal to twenty-nine per cent. on its capital stock, which may or may not have been paid in.

We have followed this new order of things through all its various channels in marketing these two important staple products of the farm, and how transformed from their former state. If you have a hog or a steer to market to-morrow in Kansas City, if you have a hog or a steer to market in New York, if you have a hog or a steer to market to-morrow in Youngstown, you must compete against whom? The proposition has been answered, are you competing? We are trying to. How long will you be able to compete? We don't know.

We have endeavored to conclusively point out how the greater number of the products of our farms have changed; finished and complete as they were in former times to rude and unfinished in their present state, and how the laws of supply and demand have been made imperative thereby, and how the vast arteries of commerce have been dammed up and deviated from their natural and legitimate channels. A few years ago, a man once respected and possessed with wonderful talents, after he had plundered a city treasury to the extent of a million of dollars, blandly propounded a question to the people, which has well nigh become a universal slang phrase, "What are you going to do about it?" The question was answered to his full satisfaction, and "Boss" Tweed died in a felon's cell.

It is an easy matter for the most unskilled physician to decide that a patient is sick, but to prescribe and apply a remedy successfully is what makes him a *most skilled physician*. Some of our political physicians say, "We are not sick." Perhaps not. Some of our political physicians say "Government control of our staple products of the farm." We hardly think so; not but what the theory may be correct, but no civilized nation is yet ready to put in practice the principles of universal nationalism. Some eminent agricultural and political physicians tell us, "Cheaper production and compete," which is partly true and which is partly not true. We disagree without discussion. Still another school says compete by combining and control prices and limit production. Admitting (which we do not) the just and moral side of this question, it would be a lofty flight of imagination for the theorist to combine 39,000,000 of people engaged in agricultural pursuits and the productions from 9,000,000 of farms; it would take three generations to educate them to the experiment and one to decide it a failure. Still another school tells us that we must rely wholly upon individual effort. We fear they have never read the preamble of the constitution of the United States of America and the object for which governments are instituted among men. We not wholly, but partially disagree. Then what solution do you furnish to this problem? We answer, we have endeavored to present these facts in a fair and unbiased manner and leave the intelligent hearer to decide. There yet remains the second great middle class of men and their profits, to whom we intended to pay our respects, and will answer it, as well as the "where," "to whom" of our subject by answering it locally. We have in this locality a market unrivaled between Pittsburg and Cleveland, and almost as good for unstaple products as these cities themselves. Raise those products that are

finished and complete when they leave your hands. Raise and market those products that the people in your market are anxious to have and pay a good price for, and not compete against a combine and syndicate with its millions behind it. Pardon me for a personal illustration: A farmer who owns an elegant farm and plenty of money to use has recently been taken within the city limits of Youngstown. He raises and markets two and three-year-old steers, as he did twenty-five years ago. He told a friend a short time ago he did not make money enough now off his farm to pay taxes and hired help and keep up repairs. Raising cattle on land probably worth \$200 per acre for farm purposes alone, when almost any ordinary person could make a fortune in ten years and be ready to retire. Simply ignorant of the advantages he possessed with a fine market at his hand.

Raise those products that are best suited to your soil, locality and taste, and as far as practicable, sell direct to the consumer. Sell for cash and buy in quantity for the same; the day of barter in trade is past. We say, parenthetically, live within your means. Keep out of debt. Go surety for no man, and if the income from the cash sales of your farm is \$300 a year, and your expenses of absolute necessity are \$299, cultivate a bank account with the other one.

BEST MANNER OF OPERATING A SMALL FARM AND ADVANTAGES OF SMALL FARMING.

BY L. D. MOORE, VAN WERT, O.

In presenting this paper, I wish to offer no apology other than has already been noticeable, in previous institutes, if not in this, that farming on paper, if not the most profitable, is seemingly the most pleasant and is in best demand at this season of the year. But that kind of maneuvering doesn't confuse us small fellows at all; we will go on just the same, as Arthur Young put it, "turning the bleak rocks to gardens, and the sands to gold."

That is pretty strong language, isn't it? I don't know if we can make those large farmers believe all of it, or not.

Van Wert county has, I venture, as many small farms of forty acres or less, as any of her sister counties, and I have some hesitancy in presenting to this institute, a manner of operating these small farms. You notice the secretary wants the *best* manner; he put me in a box right in the beginning.

However, I find it won't do to invest too heavily in machinery and tools. It is nice to ride and plow, ride and harrow, ride and do nearly every thing on the farm, but if our large friends will work with us awhile, they'll find they can't ride and hoe. If we will just be on the alert, there are various ways that we can make a saving in preparing tools for farm work. A spade or a disk harrow is a very good implement, but I don't think it would be to our best interest to invest in many such tools. In fact, if you will note carefully, before we get through you may find a secret whereby that old sharp-toothed, three cornered harrow is not so much of a humbug after all. In small farming, as well as in any other, it is necessary that the farmer is amply supplied with tools, but he can have *too* many, as is the case in many instances, necessitating an outlay of money that should be appropriated in other ways. Few tools and a willingness to use them; this, I presume, would be a good motto for us. Then, as to the mode of cultivation, every farmer has his own hobby, and you might as readily expect to immediately change the contour of our continent, as to make each farmer in this institute see at once, that shallow cultivation is superior to the old method. It is not my business to say what cereals should be produced by the small farmer, nor to what extent he should sow. Such attempts are folly, but the farmer that has any ingenuity about him, must settle such difficulties for himself.

One farm may be adapted to one kind of grain, another to something else. One man may delight in producing one kind of crop, another may delight in some *other* kind. If you will observe closely, you will conclude that *that* has a great deal to do with a man's success on the farm.

Again, the small farmer has the advantage of his large neighbor in more ways than I have here time to enumerate, but *among* the many advantages, is the one of fertilizing and giving *special* attention to every thing at the proper time. You may pick up almost any agricultural paper at hand and find something about brother Terry's red clover, or somebody's else superphosphates, but it won't do to neglect the horse and cow stable, nor the hen coop. That kind of superphosphates suits us small farmers best, and by careful attention we can fertilize in this way a good part of our farms each year. However, the clover should not be neglected, as it is equally as good for us farming on a small scale as any other. It won't do to depend entirely on the common *fish-worm* for our fertilizers. He does his work well, and deposits tons upon tons each year, but our success will be greater if we learn to utilize what we have already at our command. One hundred and sixty acres divided into four or more farms, will certainly be tilled with more care than if under control of but one person. In small holdings, a feeling exists foreign to tenants and hired men. That old song "There's no place like home," has no finer response than in the affections of the small farmer and his household. Why, my large farmer friend, I want to say to you here, that *you* can't farm *forty* acres successfully, let alone *four times* forty. We, of forty and under, can not possibly work it for all there is in it.

The writer has only seven, and it hustles him to farm *at* it even. We are yet working at a great disadvantage. Our knowledge of farming, of crops and things are very limited, although we have been struggling hard to gain an ascendancy since the reign of Henry VIII. It is certainly almost time to look into the matter and see if there is not *something* very wrong. We have been working hard, we have some money, we have been then at least partly successful in a financial way, but that surely can not be our only aim in husbandry. Can it be possible that just because we are farmers we shall not hint at any thing in this institute but money, *money*, *MONEY*? Don't we have any claim on the *beautiful*? Suppose we educate muscle less and mind more. Would you believe me that we farmers have the grandest lessons thrust even under our very noses and we pass them by unnoticed?

This should *not* be so, if it *were* not we would have less need of the institutes and their lecturers. As it *is* we need them much. Small holdings certainly give the *greater* number of privileges, or at least has a tendency to create a desire in a greater number to *know* more of the unknown, to delve deeper into the mysteries of agriculture and the sciences pertaining to it, and present the yet hidden treasures for our benefit. Such a state of affairs you will certainly admit can never be successfully brought about by tenants of large holdings. Not only is this true in an *educational* sense, but the fact that wealth being more equally distributed among a people make them more self-sustaining and methodical in their purposes is of sufficient weight in the judgment of an unbiased public to convince them that small holdings, *if not already*, will soon become the warp and wool of our great agricultural fabric.

HOW THE SMALL FARM HAS PAID.

By G. S. PENFIELD, CENTREBURG, O.

The small farm contains thirty-three acres; a public road on each side, and an open lane across each end—a small world within itself; and a poor one at that when we came into possession of it in the spring of 1877.

It had been "city farmed" for many years; that is, the owner had other means to pay expenses besides what came from the farm. In consequence of this it was farmed by any one who wanted to on shares, and when it got so poor that no one would farm it that way, it was rented by the year, and when fall came they would take what little had been raised and skip.

After we had taken possession many were the remarks made and questions asked. The county treasurer said, "We would starve out in less than two years, as others had." Others asked, "How do they manage to live?" He was told they work hard. Yes, we did work hard for the three following years.

Finding all of the plow land worn out, and seeing what it needed, and with no means at hand to make it any better at present, we selected about one acre on a side hill, which had been in pasture, and commenced raising strawberries for market, to secure means by which the farm could be stocked, necessary implements purchased, and permanent improvements made.

We did so well with the strawberry bed that we were encouraged to raise other small fruits. In this way we were enabled to stock our farm. During this time the rest of the land was resting. Many persons said we were getting rich raising berries; that we made more money than any farmer did off of five times as much land. The strawberry bed has been a source of profit to us on the small farm, being located near town. We have found that good berries always sell; it is no harder work to raise berries that sell for twelve and one-half cents per quart the season through, than to raise them for five cents. It is like every thing else, just what you make of it.

In this age of competition every one must put forth his best energies if he expects to excel, as it is only the best of all things that find a ready market.

On January 1, 1880, we thought to let the farm run alone, that is try to pay its way. It had taken all to pay expenses up to this time. That year we sold off the farm \$237.62 worth of produce.

We have kept a book account of every thing bought and sold since, even to a postage stamp. The most we have sold off the farm in one year was in 1889. That year we sold \$1,481.15 worth. In the twelve years, commencing with 1880, and ending January 1, 1892, we have sold \$10,334.11 worth of produce. Of this amount \$5,854.24 was received for 1,713½ bushels of berries.

When we commenced farming we had one horse (a hired one,) two cows, some chickens, a one-horse wagon and harness, harrow, spade, shovel, hoe and scythe. For the rest we were dependent on our kind neighbors.

We soon found that the fields had been plowed very shallow, and there was but little fertility left; but by plowing deeper and putting on what manure we could get, the fields could be made to produce better crops.

The corn that we first raised I could cut a shock of 100 hills at four arm's full almost all over the field. By tillage and manure we have raised on the same ground ensilage corn, the stalks measuring sixteen and one-half feet long, nine feet to the first ear, and two more ears above that.

I have raised wheat that was so short it had to be cut with a cradle, and for bands had to pull up standing wheat by the roots to get straw long enough to bind with, even in small bundles, and when threshed it yielded five bushels to the acre.

Since, on the same ground, and the season no better, have harvested twenty-six bushels per acre.

When we found that a little manure did much good, we began dairying. With the help of the stock cutter and horse power, also the silo, we could keep more cows and thus make more manure. One thing leads to another. The fences were taking up good ground and time to keep them in repair. Now we have only about six acres inclosed, which is a side hill with many second growth oaks and chestnuts on it. Out of this side hill gushes a spring, the water of which runs into a large ice pond, the overflow pipe carries the water into a large trough in the pasture. After the cows have been fed in the stable, in warm weather, they are turned out to exercise and enjoy the shade and pure water until it is time to feed again.

Our stable is so warm that potatoes have not frozen in it since it was built eight years ago.

By feeding altogether in the stable and using plenty of straw for bedding, we soon had a deposit in the farmers' savings bank, located on the high road to successful farming.

Last year we made and put on the farm 201 two-horse wagon loads of manure. We keep three horses, five cows and three head of other stock.

For several years we have not plowed any more land than we could put on from 25 to 30 loads per acre, and as they say "Blood will tell;" so good manure will tell every time. Last year we fed to our cows and pigs over 7 tons of grain feed, mostly bran and oil meal.

The horse-power and ensilage cutter has been no small factor in helping to make the small farm pay.

There is hardly a farmer of to-day but has or wants all of the expensive and improved farm machinery, yet not any machine is used more than three weeks in the year, but still they are necessary to raise and harvest good crops. How is it with the corn crop? It looks as though some farmers tried not to save their corn fodder, but tried to waste it as soon as possible.

The fodder cutter can be used profitable four or five months in the year. The fodder goes one-third further in feeding stock, is more profitable to them, and what is not eaten can be handled so much better and returned to the farm quicker.

Last year we cut 19 two-horse wagon loads of clover at one cutting from three acres, when some time before the yield was only one load per acre. We raised the common red clover for soiling. Most every season we cut the same ground over three times—by commencing as soon as the first blossoms begin to show. But for clover hay we raised the mammoth clover; it does not require to be cut as soon as the common kind does for hay. With us it is ready to cut the last of June; by that time the rush in marketing the berries is over, and as we do not pasture our meadow it makes a large growth to lay on the ground through the winter to plow under for corn in the spring. Last season we cocked it up right after the mower, it being so heavy we had no use for a rake of any kind. After standing in the cock some two days, or as soon as it was dry on the outside, we then put two of them together by cocking it all over, and as soon as it was cured on the outside, we opened it out one load at a time and hauled it into the barn. It was nearly as green, leaves and stalks, as when first cut, and it was not dry and hard as when clover is cured in the sun. By letting it cure in the cock, as it would in the silo, the cows and horses are very fond of it, and in feeding it out this winter we have not found a particle of it mouldy. We would not advise farmers to do as we have done; they may have a better way, but it did so well for us that we shall do the same way this year.

In the hot weather the cows are better off in the stable away from the flies and sun while eating, and in return give more milk; the flow is more uniform through the season; they will be in better flesh in the fall than if they had to travel all day in a dried-up pasture to get sufficient food to supply their wants; also the manure will be

saved. Any one who will try this way for a season, I think, will be better off financially and manurially, and could not be induced to go back to the old way of pasturing the whole farm after haying and harvesting.

When we commenced dairying, the first year our cows averaged 128½ pounds butter each, but by feeding and raising the best calves, last year they averaged 253 pounds of butter each.

As all farmers keep some stock to eat up what they raise on the farm, the question arises in the thinking farmer's mind, what crops are the most profitable to raise in order to pay for labor bestowed, and above all things make the farm grow better crops each succeeding year.

Economy says that the farm, like young stock, should be kept growing better all the time.

We read so much in the papers that farming does not pay. City merchants disconcur on the subject. It is discussed on the cars, at town meetings and even at public funerals until it seems a fixed fact.

To the man of persevering energy there is but one answer—down right laziness.

Now in making this statement, it will make some farmers feel like kicking over the traces, for the reason, it touches them in a tender spot, but it is the truth? Had they not better spend their whole energy, time and thought on their business. The dry goods merchant, rail road president, and all business men do. Is not the farmer a business man?

The trouble with us all is, we fail to make good use of what we read, see, and hear. Have you not seen a farmer working some new way to accomplish a certain end? and while he is making something out of it others will stand off wondering what it all means. One has only to visit the country store to find such farmers spending hours discoursing about the weather, tariff, bad crops, and the last horse racing.

When we come across a new thing watch it and think about it. Success is often deep thinking put into practice. Would our friend Terry be what he is if he didn't think and think hard too.

Others have attained their present positions only by applying thought and labor with self-denial to accomplish their object.

Never let us be sure that our way is best, but watch others who may have a cheaper or shorter cut; if so, catch on.

THE FARMER AND HIS HIRED MAN.

By IDA A. DURBIN, KNOX COUNTY.

The scientific and practical side of every thing pertaining to farm life has been so thoroughly discussed at our institutes that it was quite a task for us to choose a subject.

An essay is always considered to be of a dry, prosy nature, and this may prove no exception, to at least part of this audience. For indeed a few years ago life on the farm was to us as a "sealed book," but some thirteen years have given us the opportunity of becoming quite well acquainted with the farmer and his hired man.

We think that our farm laborers are in many respects equal to the laboring men of villages and towns. And if what we read be true they are certainly better paid than workmen of other countries. They are generally sober, hard-working, industrious men or boys, many times uneducated, perhaps unable to read or write, and under these circumstances we have often wondered that they are as good as we find them. But farm laborers are divided into three classes. The boy between sixteen and twenty-one who lives with the farmer and is one of the

family; the married man, living, perhaps, in an adjoining house, and the tenant who is running the place, while the farmer, grown old and worn out, has moved into town, there to spend his declining years. But it is with the first class, the boy, with whom we wish to deal. Every summer he comes into our home, sleeps beneath our roof and eats at our table. We feel interested in his welfare, for we have often found him dissatisfied, and we know he is anxious to get on in the world, but does not know just how to go about it, and sometimes he tells us he is working on the farm because he can not find any thing else to do. Now young man—if there be any such in this audience—we have been a close observer of you for some time, and we wish to tell you facts and warn you in time, or in ten or fifteen years you will be just where you are now—some farmer's hired man. We will suppose you are poor, *no disgrace*, for after all necessity is the stimulus which we need to spur us on to greater efforts—your present occupation is farming. Now whether or not you expect to make this your life work, enter into all your tasks with a zeal born of enthusiasm; every thing you do, do it just the best you can. Do not search for an easy place on the farm; you will never find it. But rather search for the farmer who is obliged to keep help both winter and summer, then make yourself so essential to his comfort that he will be loth to part with you. Be careful to please him in all the little things. We often hear the expression "he is a good hand in the field but a poor *chore boy*." Watch how he feeds his stock, for the feeding and care of farm animals is an art in which every farmer boy should become proficient. Remember that well-bedded is half fed, and if you would keep in the *good graces* of the farmer handle with the greatest care those beautiful fat, sleek horses, for next to his wife and children they are his especial pride. Be kind and courteous to the farmer's wife, for her's is a life of routine and toil, and your presence may add another weight to her already overburdened shoulders. If you have any spare moments *read*—if you can not procure books, read the newspapers—not the illustrated kind, filled with sporting news, suicides and murders, but the ones which will tell you all about what is going on in the world around you. You will hereby gain quite a liberal education before you realize it. Perhaps your wages range somewhere from \$15.00 to \$17.00 a month. You sometimes think this sum inadequate and claim that it is impossible for you to save enough to get a start in the world. My boy, richer men than you ever will be, commenced life on less wages than that. Jas. C. Flood, George Peabody, Peter Cooper, Vice President Morton and many of the world's millionaires commenced life as poor boys, some of them receiving but \$3 a week; but by close attention to business and strict economy, they amassed fortunes.

The facts are it is not how much wages you get but how much you can save? It has been truly said that "any fool can make money but it takes a wise man to save it." You must learn to save a portion of each month's wages. You can do this or you can foolishly spend it all. We knew one boy who worked nine months, receiving \$18 a month. At the expiration of that time he had just 75 cents coming to him. We knew another boy who worked for \$15 a month and he managed to help support an old father and mother. So *we repeat*, your success will depend on not how much wages you get but how much you can save. We regret to say that sometimes you go to the nearest village and *there squander* your hard earned money. And right here we wish to thank the people of Fredericktown for the efforts which they have made in the past to banish the saloons from their midst, and now if you can only obtain some power which will enable you to annihilate that gambling room you will have conferred a great blessing upon the country boy. Other companions grown older in sin tell him they can make more money in one night than he can in a month; so he is persuaded to try his luck at those dangerous thought fascinating games. Well, it is the old story of the *spider and the fly*. You all know the sequel. Now young man if you know that you have a weakness for those games and feel that

you can not trust yourself we advise you to place your money where you can not easily obtain it. After you have saved \$50 or \$100 safely invest it, and you will be surprised to find how fast it will accumulate. But you may think it impossible to ever save enough to start in life for yourself. But we know it can be done and wish to give you one or two instances. We know a man who at the age of fourteen was turned out into the world to shift for himself. His father had been wealthy but by one of those sudden turns in fortune's wheel he lost all, became broken hearted and died, leaving his son penniless. The boy drifted around from one place to another and finally at the age of seventeen went to work on a farm. His wages were \$17 a month. The man who employed him was a hard task master but the boy worked on. If he had other ambitions no one knew it, but in the meantime he had saved his money and at the end of three years had laid by a snug little sum. Nature had not endowed him with a strong physique and he was well aware he could not endure the hard work on a farm. One day he quietly informed his employer he believed he would go to a certain business college and learn one of the many arts taught there. The old man laughed at him and advised him not to go. But he went, studied diligently, paid his board and tuition out of his own savings and when he was through a situation was found him and he was able to earn \$30 a month. He worked away and is now getting from \$20 to \$100 a month. The tables turned, however, and that old farmer for whom the boy worked became insolvent and two years ago he went to that young man and asked for the loan of a thousand dollars. Having become accustomed to save his money in boyhood it became second nature in manhood and now he has a very respectable bank account. We know another young man who has been obliged to work out ever since he could drive a team and manage a plow. He saved his money and although he is still a very young man is able to farm on the shares, having procured a term and all manner of farm implements.

So we think it can be easily proven that it is possible for a hired man to save money. But where there is one that does this we think we would be safe in saying there are twenty who do not. We might mention numerous instances of the latter, but will here give you just one of the many which have come under our observation while living on the farm. Late one afternoon in October we saw a man approaching the house whom we thought to be a tramp but after looking again we concluded he was a laboring man. As he came up to the door we thought there was something familiar in his appearance but failed to recognize him. He asked for the man of the house and said he was hunting work; he told us that ten years ago he had worked for us and then we remembered him.

We expressed our surprise at his altered appearance and inquired as to his welfare. We soon found that during all those years he had been wandering about working first in one place and then in another. He said that the reason he was in so bad a condition, financially, was because of his bad luck. But, young man, we happen to know that some of his money went into the hands of the man who keeps the saloon and the gambling room. In addition to all his troubles, he had married a woman who had lived in town. She had gone with him to the country, moved on the first day of April of every year, and finally concluding that marriage was a failure, had gone back to live with her parents. His heart seemed well nigh broken, his ambition gone, and he said that at times he was almost persuaded to commit suicide. This may seem to be an extreme case, but we can assure you it is a true one. Now, where was the difference? The latter man had just as good a chance to get on in the world as the former ones. They were all poor and uneducated. The first young man was not a model in every respect. He was quick tempered and passionate, not very refined for he had never known the influence of a good home. But he did have that stick-to-it-iveness and perseverance which are so essential, and he also had confidence in himself. We think that without this element you will be powerless, for what can we accomplish if we have not confidence in our own efforts? You

know when Cyrus W. Field was laying the Atlantic cable he was told that he never could succeed. But he knew no such word as fail, so he *persevered*, and to-day it is one of the greatest achievements of the century. What others call luck, we call good management and a confidence in one's efforts to carry out the project in view. Therefore, in ten or fifteen years, we hope to meet the persevering young men in this audience, and to find them in comfortable homes and masters of some good profession or trade. And now

"My boy, you're soon to be a man,
Get ready for a man's work now;
And learn to do the best you can
When sweat is brought to arm and brow.
Don't be afraid, my boy, to work,
You've got to, if you mean to win!
He is a coward who will shrink;
Roll up your sleeves, and then go in!

"Don't be discouraged, and get the blues
If things don't go to suit you quite;
Work on! Perhaps it rests with you
To set the wrong that worries, right.
Don't lean on others! Be a man!
Stand on a footing of your own!
Be independent, if you can,
And cultivate a sound back-bone!

"Be brave and steadfast, kind and true,
With faith in God and fellowman,
And win from them a faith in you,
By doing just the best you can."

To the farmer, we would say don't be too exacting with your hired help, whether it be the boy who sleeps beneath your roof, or the tenant who works your farm. By so doing, you may not become so rich in this world's goods, but you will have an easier conscience and a better *hired man*. Feed him well. Nothing so contributes to the happiness of man as a good dinner, and he never descends so near the animal creation as when hungry. Every wife knows that the way to the heart of her husband is through his stomach, and the same may be said of the hired man, and we believe three good meals a day always on time, will transform him from a sullen, morose, unwilling servant, into a cheerful, good natured man. Reward him not with his wages alone, but give him occasionally a word of praise. It has been said, "It is the mark of a noble nature to be ready to recognize that which is praiseworthy in others, and on the moment, to award to it its fitting meed." We all love honest praise. No heart is proof against it. The God of the universe demands our praise, and we believe he has implanted in each human breast, the love of approbation.

Don't be too severe in your criticisms of the boy. Remember that what you see is only the frame-work of the man, and it may be as yet a very incomplete structure. Have faith in him, and he, knowing this, will try the harder to keep your confidence. Set before him an example of honesty and integrity; any thing which you may do to the contrary will never be forgotten. This fall the name of a prominent farmer was on our county ticket. An honest laboring man was heard to say that he would never vote for that man, for he was his tenant for two years, and a *meaner* man he never knew. So my friends, if you have a political bee in your bonnet, be careful how you treat your *hired man*.

We know the farmer's life has been and always will be one of toil. True, modern inventions have done much in the way of machinery to lessen farm labor, but notwithstanding all this, the farmer is obliged to do much hard work, and while he toils away, putting in his crops and harvesting them when ripe, he has no assurance as to what he will realize. The bugs and drouth may destroy them, and his loss will be large, or he may have an abundant harvest, and the cry will be over-

production; prices must go down. He feeds his hogs and cattle, hoping to realize a profit, but sells them to the butcher for less than four cents a pound, and Saturday night, if he wants a little steak, buys it back again at twelve cents a pound. In fact the farmer raises nothing on which he can set a price, unless it be a standard-bred animal, and very few of us own them. But so long as a few men are allowed to buy up the world, the farmer will never realize much for his farm products. It would make no difference if the whole of Russia were famishing and every country in Europe should open its gates to our hog, the American farmer would reap no benefit so long as the combine, the monopoly and the trust are allowed to exist, and not being a politician seeking an office, we feel at liberty to say that during every campaign our leading speakers pay little attention to these evils, and you are made to believe that your success or failure depends on high tariff, low tariff, or perhaps free coinage of silver, while the facts are they have not the courage to throttle these monsters which are sapping the life from American agriculture; but notwithstanding all this we love the farm, and we think every farmer and his wife should endeavor to make it so attractive for the *boys and girls* that they may never wish to leave it. Let us teach our boys that the day is past for the ignorant man, and our girls that it is just as honorable to be the wife of an intelligent farmer as to be the wife of the doctor, the lawyer or the politician. Let us have good district schools, that we may educate our children, for we believe that a good school is a monument, telling of the judgment and thrift of the people who compose its districts. But to the owners of all broad acres gathered here to-night, we ask it of *you* that you keep the farm. Hard times may depress you; the real estate man and the speculator may haunt you and spread before your eyes glimmering visions of wealth to be obtained in great cities, but wherever you may go and in whatever business you may engage, you will never know that peace, quiet and contentment which was yours when you were the proud possessor of a rural home. And your children, if obliged to leave it, will ever think of it with tender regrets, and in their minds will always be loving memories of childhood's days spent upon the old farm.

Then happy he whom neither wealth nor fashion,
Nor the march of the encroaching city,
Drives an exile from the hearth of his ancestral homestead.
We may build more splendid habitations,
Fill our rooms with paintings, and with sculptures,
But we can not buy with gold the old associations!

"HOW TO KEEP THE BOYS ON THE FARM."

By C. T. NORTROP, GARRETTSVILLE, O.

MR. CHAIRMAN, LADIES AND GENTLEMEN: While I esteem very highly your kind invitation to address you at this meeting, it has been a query in my mind on just what principle it was that I could have any thing to say to you whose vocation is so different from mine. Especially have I wondered how it has come about that I am to speak to you on this subject: "How to Keep the Boys on the Farm." But I remember two expressions quite current in the state where I recently lived which throw light upon the matter: One is, "Every man thinks he can advise an editor how to run a newspaper;" the other is, "You never saw an old maid who didn't know just how children ought to be brought up." So on this principle, because I am not a farmer myself and because I have no son to bring up, I am capable of addressing you upon this topic. No question could be more timely for your consideration than this one.

No doubt each one of us was surprised to learn as we did from the last census bulletins how the population was massing into the cities. We were not conscious of the change, so slowly did it go on, until we were confronted with the figures, and we know they never lie. The county where most of my life has been spent is agricultural. A census bulletin only recently issued gives it as the largest hop-producing county in the United States. The dairying interest is also large; but of the twenty-four towns which comprise the county, only four increased in population from 1880 to 1890, and one of these was Richfield Springs, the famous summer resort, and the other was a railroad headquarters. Every purely farming town is smaller to-day than it was ten years ago; so is it in many agricultural counties in New York and all the eastern states.

Now, can any thing be done to keep the boys on the farm? Above all else, it seems to me that the calling of a farmer must be magnified in a boy's eyes if we expect him to follow it. If a boy can not feel that farming is as high a calling as any he can not be held to it. If it seems to him inferior to business, to the practice of medicine, of law, then of course he will be drawn toward them and away from the farm; but if he can be made to feel that no calling is more important, that upon nothing does the nation depend more for its general prosperity than upon this industry, then there are some hopes of his staying at home. Every boy should be taught that the great source of wealth is the ground. The farmer in raising his crops comes nearer actual creation than any thing else. Strictly speaking, he is the producer of the nation; all others are consumers. The mills may run and turn out their fabrics and products, but in case the ground refuses her increase, business is dull and there is a general stagnation; there may be even destitution and famine as there is to-day in the Volga Provinces, mainly because the rye crop failed last year. In respect to business, the farming situation is the leading factor. If a big crop is probable, the orders are large for the fall trade. Business men scan the crop reports published in the summer and shape their plans accordingly. Farmers ought to realize the importance of their calling; that is the foundation upon which all others rest. Let us imagine different industries to be blotted out of our business life, say for instance the manufacture of boots and shoes, or better of cotton and woolen goods. Who can imagine the inconveniences and privations that would result? But can we imagine the extinction of farming interest; that would not only mean the crippling of countless other industries but it would mean death as well to man and beast. Now, I think because the farming industry is so important, because its interests, its prosperity or adversity affects so vitally innumerable other callings, a farmer ought to be ready to magnify his business. Other men do. They do not hesitate to sing the praises of their pursuits. They believe in what they are doing, and they produce the impression upon others that they do. A farmer wants to do the same. He needs to feel himself that there can be no business more important than his, and feeling that, he can do much in making his boy see it and feel it, and then I don't believe he will turn his back on the farm as light heartedly as some seem to do.

But again, a farmer's boy ought to see that this calling is worthy his best efforts; that it is worthy of and really demands the best education; that men of the best mental training and the consequent grasp upon affairs which comes from real mental training are the most successful and that the highest success can come only in this way. Away with the notion that any one can become a successful farmer. This is an age of the sharpest competition, and the ignorant, unskilled careless man is crowded to the wall. There is no room for such an one any where, not even on some cross road back on the hills. The old idea that a few weeks' schooling in the winter was enough for the boy who was to be a farmer so that he could read, write and cipher is dead and ought to be buried. It doesn't follow that a farmer need know Latin and Greek and the higher mathematics, not at all; but the situation to-day does demand that the farmer should have the best mental ability to rec-

ognize the very most that can be made out of his land and his stock, and then have fertility of mental resource so that he can work most intelligently to the realizing of his ideals.

The most successful farmer of my acquaintance is one of fine mental training; who knows every foot of his farm, just what each acre will produce best, just what each piece of ground needs; each one seems to have been a special study with him. He is a famous grower of Hereford stock; he nets 10 per cent. on his farm yearly. But he is the only one in that vicinity who does. Why is it? Others whose lands join his, and are of the same general character, just manage to live along, while he has grown wealthy. I can account for his success only from the fact that he brings to his work a well-disciplined mind, which grasps firmly the problems which arise from the nature of his calling and which can grasp also the facts necessary for their solution. And let me say further, that this gentleman's oldest son is at Princeton college and is eagerly waiting the time when he shall graduate and take hold of one of his father's farms.

There is no reason why one profession should be called a learned profession and another be excluded from the category. Each profession has its principles and rules, its literature, and it demands its special learning. And he is successful in his profession, whatever it may be in proportion as he is learned therein. Nor can an education be too liberal for a farmer any more than a lawyer. There is scarcely a branch of science that does not come in direct requisition. Farming does not consist in plowing and cultivating the fields merely, any more than the writing of a scientific essay consists in the mechanical act of writing, or than surgery consists in merely cutting flesh and sawing bone. There is an old saying, which I think I first heard repeated by a successful farmer: "Well-planned is half accomplished," which means that the better disciplined the mind, the greater the success of any endeavor of the man. And when one comes to farming with a knowledge of the "how" and the "why," I do not see why farming should not become one of the most attractive and remunerative professions. And these two things decide men as to their pursuits largely: How much intelligence is represented in it and what is the chance for money getting?

Teach the boy, as already suggested, that there will always be a demand for his products; his labor and his talents always will be sought, and hence to one who manages wisely and produces intelligently there is a great certainty of financial success than in any other profession; and let him understand that this profession demands as high intellectual attainments as any, and he will stay upon the farm. To any one who thinks so lightly of his profession as not to see these facts, and hence doubts their truthfulness, let me say, if they are not true now, if there are not as many successful farmers as there are successful followers of any other pursuit, and if there is not as much education and culture among the members of this profession as any other, the fault lies wholly with yourselves. It may be so. It, therefore, should be so. And when your son realizes it he will be less eager to leave the farm and rush into much more uncertain calling. Not only is the fact of the necessity of a thorough professional education for the farmer recognized by our government, but as it provides for the liberal education of its young men for any and all professions in its state universities, so it provides for the special education in this profession—the only profession which the state fosters, by instituting agricultural colleges and stations where experiments are made, new methods tried and science is applied to farming. They are to this what the medical colleges and the law schools are to their professions, and thus by the very people of the land, farming is placed even above other professions. It may require shrewdness for men to barter, transport and to manufacture into other goods the produce of the farm, but it requires no less the very highest energy, the best intelligence, the broadest learning

and culture, the noblest qualities of the man to fill the marts of the world and minister to the first and greatest need of humanity.

Then, again, keep before the boy's mind some of the noted farmers, and the pleasure that most men find in farm life. Each calling has its great men. Every young lawyer is confirmed in his choice and inspired to labor by such examples as Webster and Choate. Business men look to such men as Astor and Wanamaker. You will find in the office and the house busts and engravings of the noted men of the profession which the owner follows. They make much of their prosperous fellow professionals. There is no lack of great men who have been and are farmers. Our Washington was proud of his plantations. Secretary Rusk is an extensive farmer. Very many of our most influential men in politics and literature belong to this profession. Among the descendants of the Cavalier in the South, the plantation owner is the aristocrat. In England and Germany the aristocracy are proprietors of land, not tradesmen or speculators. And everywhere men who have made their fortunes withdraw from the turmoil and unrest of a strained business life to the quiet of a country home, the more pleasant and vastly more healthful occupation of the farm. It has always been so. I suppose, however, no one would object to owning a farm.

But to working it until it becomes his, and then again that he may keep it and make it pay what it should pay, is what weighs against him. But upon general principles, what one gets he works for. To honest men success comes only through hard continued toil. The process of accumulation is slow in any field of work. But more than this, accumulated fortune is no real criterion of true success in life. It is not necessary to lower other professions, but raise your own in your own estimation and in the minds of your boys. But boys are not satisfied with mere sentiment any more than men. And although "sentiment rules the world," it does so from the strength derived from the facts beneath it. There is an old saying and a true one: "Where your treasure is there will your heart be also." There is not a boy among all your children who would leave the farm if he realized that there were treasures there for him, and perhaps the best way to have him realize the fact is to make it a fact, by giving him a personal interest in the farm. The boy can not be treated as if he were a machine. It is not enough that he be fed and clothed, and even indulged now and then in return for the work he may do. The boy *thinks* and plans. He has his own ideas, and they can no more be pressed into the molds of another's personality than can an elephant become a nightingale. He will think along your lines and plan with you and devise for you if you will give him a chance. If you do not he will think along his own lines, carve out his own path, for there is nothing in the world that can stop him, no circle that can circumscribe his mind. You can not only be of the greatest help to him, but he will become the greatest help to you if you take him into your fullest confidence in the concerns of your profession. The great unrest in the social world arises largely from the disregard of capital to the claims of the individuality of the laborer.

Men, so far as their rights of personality are concerned, are all on an equality. The boy becomes a man in this respect as soon as he can think. Ask his advice; it will not only please him and make him more faithful in the discharge of his duties, but it will teach him the things he must know if he becomes a successful farmer, and this knowledge will interest him. Even a little piece of turf becomes a surpassing interest when we begin to know something about it; and that which interest holds, and every new interest that can be awakened is a strand in the cord that will fasten the boy to his future profession. Put upon him responsibilities. This will be another tie to hold him to the farm. A man always rises to his best self as he feels the weight of responsibility resting upon him, and he is loyal and true generally to it. As the affairs of the farm begin to rest upon the shoulders of the boy, lightly at first and then more heavily, the conditions of his best develop-

ment of mind and taste will be along the line of responsibility. This is one of the laws of the mind. The boy feels the dignity of the confidence reposed in him, and the importance of the trust and thing that created in him the new feeling of responsibility and greatness will itself assume a position of high regard in his mind. The "thing" acts upon his mind and there will be a reflex action of the mind upon the "thing." Make the farm something of financial interest to him. The reason the boy leaves the farm most often is because he believes he can make more money at some other trade or profession. He wants money and he needs money; it may not be much, but he needs some. He works and generally very willingly, and he will do so all the more if he can see some financial gain in it. Let him have something that will yield him money that he may call his own. Give him some stock, a sheep, a horse, or even more; a whole herd of young stock as he can care for them, and tell him what is in them financially, and help him by advice and counsel to realize all that is possible from them. He will wish to enlarge next year. Give him a piece of land to work, and when the returns come in he will be anxious for the experiment another year. Teach the boy how to make money upon the farm and he will be less likely to leave it. But if he does not see how this may be done (and this practical demonstration is the best way to teach him), all the king's horses and all the king's men will not be able to keep him there. Nothing but the force of circumstances, and then he will consider himself misused and, in seven cases out of ten, he will make a failure of the farm and life.

Then comes in, also, the fact of the boy's education and training, thus putting a premium upon intelligence and calculation, judgment and perseverance in these things which will enable him to succeed in farming when he enters upon it as his real life's work. And his success again will be an incentive to others to try where he has succeeded. Keep the boy at home by giving him good literature. It is conceded that the farmer has his journals and magazines and papers which are devoted to his profession, not the cheap trashy stuff which goes out under the name of a farm journal, but the very best; those periodicals which keep him abreast of the thought and discovery of the times. These will create an interest and awaken a desire for effort in this calling in the mind of the boy. But there should be upon the reading table of every farm house one or two of the very best magazines and papers of the day. Every farmer can afford at least one of these. Indeed he can not afford to be without them. It is not culture that drives young men away from the farm, but often the lack of it; the lack often in the home, often in the man. Knowledge and refinement do not narrow the farmers' horizon, but ignorance does, and knowledge and refinement also enlarges the horizon of other professions. So that the young man feels that there is no scope for his ambition in his father's calling and he seeks it in some other. Put into your homes this great refining power of our high current literature and hold him by it to his home. Do not let the homes of men of other professions attract him by their show of greater knowledge and refinement so that he says, "If I wish a cultured home I must seek some other profession." Make home attractive in other ways. Have the boys and girls feel that when they come into their home they are glad it is theirs. It requires less money than one would suppose to keep the home attractive. It requires a good, big desire to make it so, and patience and perseverance to keep it. It is not the value of things standing on the mantel and hung upon the walls that makes home attractive. These are aids, and something of the sort is necessary, but that which keeps your boy from making unfavorable comparisons after he has been to play with the banker's or lawyer's son is not the richness, but the taste, coziness, of their homes. We need to cultivate the art of home-making. It rests in the gentleness, unselfishness, thoughtfulness, pleasantness, and in a word, refinement (which we can feel better than define) which pervades the home, father, mother, sister, brother.

Money expended to beautify and glorify the home is an investment that will bear interest in human life, and happiness and growth. Besides literature, put

music and games and conversation with laughter into the home. We must not study our own conscience so much, but study to please and instruct and attract the children until they feel there is no place on earth as pleasant as their own home, and no man so gentlemanly as their father and no woman so gentle, and kind, and "jolly" and lovable as their mother. Then the boy will be slow to leave, and when he does it will be from a feeling of fitness for some other profession and not because he despises the farm and farm life.

In conclusion, let me say that you must not always expect the boy to stay on the farm. Let him choose his own profession. The very act of choice will help make a man of him. But when he rejects the calling of a farmer it should not be from a feeling of contempt for it, and this you may provide against by holding your calling in high esteem and magnifying it in his eyes by giving him a personal interest in the farm products, making it an object for him to remain. Also, let him know and experience all the attractiveness of farm life and farm surroundings, and the family circle will not so often be broken by the absence of the son.

THE PRESENT SITUATION OF THE FARMER.

BY D. C. BUNDY, TACOMA, O.

In providing for a discussion on the "Present Situation of the Farmer," I presume your committee were not interested in the welfare of the tax farmer—the farmer of public service, nor yet the millionaire landlord, or Big Bonanza farmer of the great and boundless plains of the west. But leaving them for the present to fight their own battles we will devote our time mainly to a consideration of the conditions surrounding the man who owns or tries to own a home and plot of ground, tilling the soil mainly with his own hands, and belonging to that great middle class who are neither extremely wealthy nor yet abjectly poor, constituting the conservative element of our people, and upon whom devolves chiefly the task of upholding our Republican form of Government, and maintaining the principles of liberty and equal justice before the law as established by those hardy pioneers who wrested their farms from the wilderness, making them to blossom as the rose, and yielding in the fullness of harvest times an abundance for the support of the home comforts of that period with a surplus left for the maintenance of age and the establishment in business of the rising generation who have become the ancestors of to-day.

When you come to examine this man's situation you find that he maintains three relationships to his fellow man. Of the farmers' relation to society we have heard from our infancy, but like the story of old but ever new, we never tire of pondering the sweet relationship of man to man, smoothing the rugged pathway of life, drawing aside the thorns growing by the wayside through the kindly sympathy and the encouraging word spoken to a comrade in the way, even though the word be spoken with the selfish motive of providing oneself with a friendly hand to be extended in the time of our need.

When we come to consider the vast possibilities of rural life, all history teaches us of the mighty influence wielded over the destinies of nations by those upon whom devolves the responsibility of rearing children amid the beauties of nature, where the invigorating sunshine and the pure air of the fields combine to give them vigorous bodies and minds alert to absorb whatever may come before them. It may be that a feeling of discontent with their lot and of envy for the so-called genteel professions may be fostered in them by yellow-backed literature, and the constant grumbling and looking on the dark side of farming so frequently indulged in by farmers and their families, or it may be a love for the grandest and most potential calling among men fostered and encouraged by a cheerful home life, and by a

knowledge of the comparatively large number of failures in other callings, by the cultivation of a taste that loves to look upon the trees of the forest in the massive grandeur of their strength, or upon the flower of the field in the sweet humility of its humble loveliness, and that sees in the gorgeous glory of a golden sunset something more than the portent of a foul day for the harvest on the morrow. The farmers' responsibility to society does not cease when he has provided himself and his family with those mental equipments that may be obtained upon an income that was sufficient for the social organization of our fathers. Times have changed, the world has moved forward from the plane it then occupied, and the farmer must move with it or be ruthlessly crushed beneath the wheels of progress.

We must allow ourselves the advantage of mingling in social intercourse with our fellows if we expect those from our ranks to successfully fight for us upon the world's intellectual battle field. Yet whenever farmers organize to meet with their neighbors, and exchange views with their co-laborers from other sections of the State and nation, or when they attempt to provide their families with the modern essentials to intellectual and social cultivation, some one who thinks father knew every thing that was worth knowing about farming, is always on hand to say "you are extravagant, and that is the reason why the cry of hard times and the calamity howl is heard in our land; if we farmers were only willing to practice economy we would be all right; the trouble is so many of us are trying to ape city airs too much. But the music of the spinning wheel is hushed forever, and the clack-clack of the hand loom is buried in the past, and in this dashing fevered race through life the man of affairs has no time to investigate at great length, but must necessarily form first impressions of a man by the appearance he makes, and if he comes clad in homespun, with shaggy hair and uncouth or awkward manner, he is pushed aside for the man whose appearance more nearly fills the requirements of the position, although our uncouth friend may be of the most sterling worth. "A thankless task is his who would mould the world to his own conception of it." We can not go back to the good old ways if we would, and therefore we must mould ourselves to the changed conditions of the present; and this brings me to the farmers' second relationship—his position in the business transactions of the world.

This should be a situation impregnable as the rock of Gibraltar, because it can not be controverted that the farmer is the man who is feeding the nations, and should the farmers' business fail for a single reason, our factories must cease their industrious hum, and our workshops must still their mighty pulsations, our mines become desolate—the undisturbed haunt of owls and bats; mighty trains of commerce on our lines of railways must stop in mid career their meteoric flight, and our very civilization languish for lack of the golden grain of the harvest, the sheep from the fold, and the kine from their stalls on the farm.

Owing to the wide extent and great variety of the world's harvest field, no such general calamity is to be feared and because of isolation and lack of organization among farmers they are not likely to ever be in a position to become arrogant, withholding food from a starving people.

Indeed, instead of this state of the case, farmers may feel thankful if their crops are not stored in other people's warehouses to be measured out to them again at an excessive profit. If the farmer would avoid finding himself in such a predicament he must avail himself of every means in his power to keep posted on the business transactions of the country.

The day has gone by when a man may plow the soil in rudest manner, scattering the seed among the furrows and rest in the expectation of a bountiful harvest. If the farmer of to-day would succeed in business he must study markets and not maxims. He must cultivate his brain as well as his field. He must use the pencil and scales as well as the plow and the hoe. It will not do for the farmer to raise any crop or class of stock just because his father made money that way, nor because

John Jones, the most successful farmer down in Kentucky, thinks that is the best way to farm. Facility of transportation and the acquired taste of consumers as well as competition and local adaptation of soil play such an important part in successful farming that the man must not only know the character of his soil and his ability to cultivate certain crops, but he must know from day to day what such crops are worth to consumers, as also the necessary cost of placing them in consumers' hands if he would secure himself against being fleeced by designing men who would not hesitate to buy as cheaply as they could by any sort of misrepresentation.

I feel certain there is no business in the country employing so many people or so much capital and whose success depends so much on the condition of markets throughout the world that makes so little use of the means at hand for the rapid transmission of intelligence as farmers do.

A great many farmers I know do not expect to get their mail from the office more than once or twice in the week, and then it is frequently nothing more than the county paper with possibly a low priced farm paper and maybe a cheap magazine, while we all know that a man in any other business requiring the same outlay of capital and labor, and whose produce was subject to such fluctuations in market value would want market quotations from controlling centers in his line every day or two.

You may say that the farmer can not afford to go or send to the distant post-office every day for his mail, and so he can not; but why should the government carry the city man's mail to his door three times in twenty-four hours defray this expense from the revenues of the department, supplemented by upwards of six millions of dollars annually from the general revenues of the government, and then require the man in the rural districts to pay eight to ten cents per quarter for the privilege of going to the post-office for his letter or paper and be taxed the same postage as his city friend.

If there is any one who can see justice and equality before the law for all our citizens in such an arrangement, he can see more than I can. That the remedy for such a state of affairs is thoroughly practicable and within the bounds of reasonable expense is fully demonstrated not only by the limited experiments of our government but by the long practice of England in delivering mail at the farm houses throughout the country. The question of one cent postage can surely have but one answer at the present time for while such a reduction might be most beneficial to certain classes of business to the rural and village population as well as to all classes in the city whose business depends to any extent upon reaching the rural districts the reduction in postage brought about by certain changes in postal classification and the increased size of the postal card is all we need in that line, because the greatest good to the greatest number would be obtained by delivering the mail in village offices and in farmhouses. All these advantages are not to be attained at once and maybe some of them not for years.

Some of them are to be obtained by farmers through their social organizations by conferring with one another and by working out problems on the farm. Other reforms and improvements may only be obtained by farmers becoming thoroughly alive to their political duties, which do not differ materially from those of men in other callings and professions.

In a government of the people, for the people, and by the people, as is the case in an elective government, no man, not even the humblest citizen, is fulfilling his duty by simply going to the polls and casting a ballot for the ticket that has been placed in nomination by some one, it may be, whose interests are antagonistic to the good of the people. He must inform himself as to the workings of the machinery and the operators who are supposed to be servants of the people, but who have at times shown a disposition to usurp to themselves the honor and power accompanying their title to office, and like the long eared beast of burden in "Æsop's Fable,"

who, being detailed to bear the sacred emblem at the head of a religious procession, when he saw the people doing homage to his burden, mistook the object of their adoration and became so swelled with pride at his supposed importance in the eyes of the multitude that he refused to proceed further. Thereupon the driver commenced to belabor him with a club, adding the words, "Go along there, it is not you the people are bowing to but the image upon your back."

We farmers, as an element in the nation's chief bulwark, must be prepared to take the place of the driver wielding a club shaped like a legal ballot, properly folded to hand to the judge of elections. In the fable you will observe that it was not an idle bystander, but his qualified driver who belabored the ass, and so it is in our case; we are not qualified to wield the ballot until we have followed the procession from its first inception in the precinct caucus and township primary, not stubbornly or angrily clamoring for the adoption of one pet scheme either in platform or ticket, but reasoning with our friends, submitting to the will of the majority, and then through petitions asking of our law-making powers that they shall enact laws bearing equally on all classes in proportion to the benefits derived.

As farmers were organized in Ohio a year ago through the Grange, the Alliance, etc., they were a power in the political field that was feared alike by the bosses in all political parties. But by listening to the voice of false prophets, our organization has been considerably shattered, our power, as an element in politics, in a measure destroyed, and it will take years of reorganization of forces to regain the ability we then possessed, to stay encroachments on our rights, or to advance our privileges to to an equality with other classes. I fully believe that the farmer's chief advantage is to be gained through a better understanding and a more thorough adoption of business principles on the farm—studying markets, the best methods of tilling the soil, and, also, the art of buying and selling to the best advantage. Beyond this, I believe there are some things that can only be reached by legislation. The Interstate Commerce Law has given great relief in the matter of transportation, but it needs to have its sphere widened and its organization made more thorough, that it may reach a greater number of evils, and its results be more speedily obtained. All classes of consumers are clamoring that the sale of food products, which includes most of the farmer's produce, shall be placed under such restrictions as will insure the consumer against deception, and the producer against fraudulent competition. There is an almost universal demand that the transmission of intelligence among our people by the aid of free delivery of mail; the telephone and postal telegraph should be made as rapid as possible, an improvement that would be of incalculable benefit to the farmer; especially, the free delivery of mail, is one which should receive their support in every way. The cry heard from many quarters that monopolists and trusts are absorbing approximately, the whole profits of the farm, or in other words, "all the traffic will bear," has a firm foundation on fact, and is one of the hardest of all economical questions with which we have to deal.

In looking through history, we find the same difficulty in all countries, with various measures for its relief. In England, we find away back in the beginning of the 16th century, laws enacted to prevent speculation and gambling in agricultural products, as for instance, a man was forbidden to buy any farm product to sell again in the same market, or within four miles of the same. No cattle were allowed to be sold within five weeks of the purchase. Certain kinds of grain were not allowed to be exported at more than a fixed price, and so on with a long list of restrictions. Perhaps we may find in this fact of history, one reason why gambling in agricultural products has grown to such gigantic proportions in this country, where all forms of business are free and open to capital. The most beneficial of all monopolies we have to deal with, is the one organized by the brokers of London and New York, and controlling the world's medium of exchange, or money. It is a true maxim that public things should belong to the public, and private things to the individual. There may

be some reasonable doubt as to the proper place in which to class common carriers who transport produce from one section of the country to another, but it seems to me there can be none in regard to the medium of exchange, by which the right to enjoy any form of property is transferred from man to man, and by means of which he is enabled to convert the surplus food he produces, to some form of wealth that will clothe or protect himself and dependent wife and children from the inclemency of the weather. Any thing so essential to man's comfort under organized society, surely belongs to the public, and it seems to me that no government would be establishing too paternal a relationship towards its subjects by assuming entire control of its currency, rather than delegate to private corporations, except temporarily, in time of national crisis, the power that may be, and in fact is, abused by enhancing or cultivating the purchasing power of money for private gain.

Let the government establish a system of postal savings banks where the people may deposit sums for safe-keeping, and at a moderate rate of interest, to be loaned out again under such restrictions and at such rate per cent. as may be fixed by law. Any shortage in the sums at the command of such a system might be supplied by drawing upon the vaults of the treasury to a limited amount for the accumulation of governmental revenue. Thus we would provide for the circulation of a revenue that will enable us to protect our people against the discrimination of foreign powers, and at the same time we would be relieved from such occurrences as developed during Cleveland's term of office, and again during the opening months of the present administration. A shortness or tight money market became apparent at a time when the trade of the country required an extra amount of money. New York brokers said, If you will buy our government bonds at a sufficient premium we will loan the money into the channels of trade; if you don't buy the bonds, there will be a widespread panic, and your party will get the credit for it. Now what else could any set of men do, having the welfare of their friends and supporters in mind, but yield to the demand, so evidently though improbably unjust, thereby averting threatened panic and placing millions of dollars in the coffers of brokers to add power to their next squeeze on the treasury, unless the government adopts some measure that will enable it to place the lawful money in the channels of commerce without the intervention of Wall street, whose denizens and hangers-on are accused by statistics with absorbing nearly one and one-half times the rate per cent. of increase of wealth in our country?

THE DREAMLAND FARMER.

BY J. G. ICKIS, ADENA, O.

[At Mt. Pleasant Farmers' Institute.]

Who has not visited dreamland? The tramp, asleep by the coke oven; the tradesman, weary after his honest day's toil; the millionaire, in his richly-curtained bed, all travel away to dreamland. Our institute speakers often tell the farmer to take a vacation; to leave behind the humdrum affairs of every-day life and visit the great cities, with their palaces and displays of art, or take a journey to some of the great natural wonders of our country. Do they forget that every night the farmer takes a journey to dreamland, and sees cities of gold with streets of silver, cataracts that dwarf Niagara, and gropes his way through caverns that, unlike the Mammoth cave, have no end? No need for the farmer to be at great expense in his vacations. All he needs is an honest day's toil, a generous supper, half a mince pie, a cozy seat before the fire, and he will visit countries of which the guide-books tell us nothing; see wonders that cast a shade on even the wildest fancies of Don Quixote, and

strange to say, the greater the proportion of pie, the greater will be the wonders seen.

Our farmer has had a busy day. Not one of the ideal eight hours, but one of toil from twilight to twilight, lengthened by an hour of lantern light at each end. The wind has blown the fences down. The sheep are all in one flock. The neighbor's cattle over on a visit, and stayed for dinner in the corn field. The horses out in the road, and an hour's work to catch them. Nothing goes right on a windy day. Our farmer has certainly earned a vacation, and let us wish him a pleasant visit as he prepares for a journey to dreamland.

You may talk of our grand railroads—the Pennsylvania, the Erie or the New York Central, with their splendid equipments—but they are not to be compared with the roads running into dreamland; smooth as glass, straight as arrows, the trains flash over them with lightning rapidity. The passengers all changed to elegantly-upholstered sleepers, and the smokers fitted up for the especial accommodation of the snorers. They run free excursions every night, and the trains are always waiting for you.

How few men have power to change their dreams into realities. The painter may fasten his upon canvas, and the king may reproduce his in cities and palaces of art; but the farmer wandering among the cities of dreamland, can do nothing but admire their beauty. Structures of glass and steel forty stories high. Every where there is glitter and show. The people dressed in purple and fine linen. No wonder our farmer feels out of place with his pantaloons in his boot tops, and the hayseeds upon his hat.

Wherein does the farmer differ from his city cousin? It is not all in the clothes he wears, for you may dress him in the height of style and place him on Broadway, and you would still know him to be a farmer. Why? Because his complexion is not that of the hot house lily to be tainted by every breath of fresh air. His face is brown by exposure, to wind and sun, and his hands are hardened by toil. Neither do the men carry themselves alike. The business man locks his store, and starts off up the street at the rate of five miles an hour, without a thought save that of the transactions of the day, or the business of the morrow. The farmer, taught by his experience over the rough roads of the country, does not walk so fast, and keeps a constant lookout for holes and ruts. Your business man strides along, striking the pavement first with the back edge of the heel of his shoe. The farmer sets his foot down firmly as though he expected it to stay there, and it does until he picks it up again. You can notice no difference between the farmer and the citizen of the small country village, with its mud pavements; for when it comes to walking in mud, one man is just as graceful as another. It is when pavements of brick or stone are laid, that the difference begins, and then even the veriest grocery clerk will assume a strut and swagger, that reminds the farmer of some of the antics of the poultry yard.

The farmer soon tires of city life even in dreamland, and he finds himself more and more in harmony with the thought that while man made the city, it was God that made the country. But before leaving the city he is going to attend a farmers institute.

The state had furnished four speakers, and wonderful to relate they all had new speeches. They had also been obliged to boil them down, just as the rest of us have to do. The horse question was under consideration. One man was advocating the two-thirty trotter as a plow horse. He claimed that as they were getting so numerous, they must be put to some useful work. He thought they would make good plow horses, as they would go so fast, the plow would have no time to jump out of the ground. The next speaker had spent \$500 that summer in trying to get his horse to trot a mile in two minutes and thirty seconds, and would have succeeded, had the distance not been too great for the time. An old man arose and

said that he and his wife had toiled hard in their younger days, and had earned a title to a good farm. In an evil hour the boys became infatuated with the race course. They must have racers of their own, which, as so often proves true, were not quite fast enough to capture the prize. The boys became dissipated. The horses were useless. Soon there was a mortgage on the farm, quickly followed by a sheriff's sale, and to-day the old man said he was broken in heart as well as in purse. You do not often hear such declarations in our institutes, but you would not have to travel as far as dreamland to find those who would give you exactly such an experience.

The sheep men were the next on the floor. One man said he had had such faith in the tariff that he held his wool for the promised advance of two cents a pound. Instead of going up two cents, the price had gone down two cents, and he believed it would be even lower next year if the tariff was not removed. Now, mind you, all this was said in dreamland, and has no reference to our tariff laws, for we all know what a wonderful boom wool has taken under our present law. Another had bought a bunch of sheep for \$75, and had lost \$150 on the transaction. He explained that the sheep had ticks on them, and they were soon scattered through his whole flock. A tick's business in life is to get there, and the way it fulfills its mission is almost sufficient to excite our admiration. The next speaker said he had bought a bunch of sheep for \$5.15 a head, and after keeping them a month, had sold them for \$5.40, a gain of twenty-five cents on each sheep. Yes, but he had fed each sheep thirty cents' worth of corn, to say nothing of the hay and the labor of feeding.

The peculiarity of the institute was that the speakers seemed rather to tell of their failures than of their successes. Even one of the ladies admitted that once in a while—that is, once in a great long while—her bread was not quite as good as it might be.

The hero of one of Opie P. Reid's novels exclaims, after having passed a restless night: "What a field of unsatisfactory labor do we find in dreamland! What feverish energy do we waste in following a road that suddenly fades away! What serious undertakings, pushed to the very verge of accomplishment, spring aside into the ridiculous. A dying old man, to whom we are handing a cup of cold water, jumps out of bed and dances a grotesque jig, while the overworked horse that we pitied climbs on the fence, strikes a match, and contentedly smokes a pipe. I clutched at a thousand ragged and flapping ends of dreams that night, hoping to bind them into a bundle of consistency, but eluding me, they continued to flap and flutter in the chilling winds of incongruity." Of course the hero was deeply in love, and they do say that a young man does not sleep very well when he has that disease. Be that as it may, I do not pretend to know, yet it is true that the scenes of our dreams change as rapidly as the views of a kaleidoscope, and our farmer suddenly finds himself away from the city and amid the waving grain and verdant fields of the country.

What wonderful crops they grow in dreamland! Pumpkins large enough to please Peter Pumpkin eater, though he had as many wives as Brigham Young. Potatoes, almost as large as some of Terry's. Immense crops of corn were grown in dreamland, for it always rains at just the right time. Their rain-makers understand their business better than those employed by our government. The wheat never blows down; the hay never gets wet, and the pastures are always knee deep. Ah, how puny man thinks he would like to run this universe, if only for a day. He might run it to his own satisfaction, yet how many of his fellow-men would be satisfied! Even were it possible for man to produce rain, what two farmers could agree as to when it should rain?

What wonderful roads they have in dreamland! Pikes in every direction, smooth as glass, and they have all been built on the golden rule system. The mail is carried daily to each farm house. The farmers fare sumptuously, with fresh meat

three times a day. Money is loaned at two per cent, and in case any farmer fails to make a profit with this aid, the government is prompt to make up the deficiency.

Perhaps some one is asking by this time, where the practical part of this speech begins. That is because you do not understand this kind of a speech, for it has no practical part. There is no practical side to the dreamland farmer. Have you never seen him? What of the farmer who is always living in the expectation of doing something great, to the neglect of present opportunities? What of the man who will spend an hour in telling you of the immense crop he raised in "war times," when a glance at his fields tells you that at present they are covered with briars and thistles. They are dreamland farmers.

We are living in the busy, feverish to-day, with no time for the dreams of the past, nor dare we build all our hopes of the future upon the dreams of a night. What of the farmer who leaves his farm, his crops, his family, and spends his time and money in the pursuit of some office. He lives in dreamland until election day, only to find that his candidacy is a farce, and his pretended city friends the wire-pullers of some other candidate. What of the young man who stands around with his hands in his pockets, waiting for some rich farmer to die and leave him a farm? How often it happens that the lawyers are the first to get their feet in the dead man's shoes, and after they have worn them a year or two the shoes are not worth owning! What of the restless army of renters, who must move as regularly as the coming of the first of April? What of the squatter on the Western prairies, who must change his location with every change of the season? They are typical dreamland farmers, whose dreams are of richer fields and better locations, which, when reached, are soon to be abandoned for some other dreamland beyond.

Our dreamland farmer is an important contributor for the agricultural press of the day. No matter how wild the dreams, or how impracticable the theories, they find their way into print. A friend of mine had a dream of a machine which would hoist up the old rail fences, while new rails and new chunks were being built underneath. As a joke he named the machine in honor of your present speaker, and sent a sketch and description of the invention to one of our leading agricultural papers. Not only were they printed and extensively copied in other papers, but the editors actually sent back for more material of the same kind. And so it goes. One says to tile every acre of land; another says so much tiling will cause dry weather. One says you must till your ground after every rain; the next that there is no need of stirring the surface of the ground at all, except to keep the weeds down. The next writer has a dream that reservoirs should be built on our hill-tops, so that our fields may be irrigated in dry weather. The prince of dreamers writes that within five years every acre of tillable land will be worth one hundred dollars, and before another harvest every bushel of wheat will be worth two dollars. Surely with the cars and elevators of the west crowded with grain that can not be moved to market, we must submit to C. Wood Davis as one of the princes of dreamland.

But it is in political life that the dreamland farmer is most active. How often have the farmers of our country striven for a place in political life, only to lose it through the vagaries of some of their own number. Might not the Farmers' Alliance have still been growing in strength and usefulness, if it had not admitted to its innermost councils, the dreamland farmer with his dreams of a two per. cent loan and a bonded agricultural ware-house? Such visionary schemes are the solvents which are to-day disintegrating the Farmers' Alliance, and, unless checked, they must ultimately cause its dissolution.

What a funeral there will be if we are called upon to bury the farmers', party. Senator Peffer will be there to deliver the oration, and it will be with sorrow of heart; for he knows that upon its death he will never succeed himself. The farmers will be there and you can see the tears of regret in their eyes; for had

they not hopes that the Alliance would indicate their right before the world? The farmers are a power in our land and they are only waiting for some virtuous Parnell to lead them on to victory. The railroad magnate, the millionaire, the stock gambler, all will be there; but no lines of compunction can you read in their countenances; for they feared the departed as one who would have forced them to give up a part of the ill-gotten gains. The Democrats will be there with faces wreathed in smiles; for had not the Alliance coquetted with their fair daughter of the south? And the Republicans will be there, but their tears will be those of the crocodile; for did not the Alliance elope with one of their beautiful daughters of the west? Thus with sorrow and pleasure, with regret and rejoicing, with tears and smiles will the procession move forward to the tomb in which is buried all the parties, the hopes and expectations of the past; and as it enters its solemn portal let us inscribe on its archway this epitaph: "Killed by the dreamland farmer."

WHEAT, RYE, CLOVER AND FERTILIZERS.

SOME OF THE SECRETS OF SUCCESSFUL WHEAT CULTURE.

By T. B. TERRY, HUDSON, O.

There is one point that we ought to take into account when deciding what successful wheat culture is. It is a matter we sometimes forget about. For the best results on our farms we must, as a rule, have a rotation of crops. These blend in together, so that one can not figure the profits on a given crop wholly by what it yields directly in dollars and cents. You must raise clover or grass in your rotation. It costs but little more to grow a crop of wheat on the ground while the clover is getting started, and it does very little harm to the clover and timothy. Again, nearly every farmer needs a certain amount of straw for bedding and absorbent. It pays to make animals comfortable, and save liquid manure. This goes to the credit of the wheat crop, not in so many dollars per acre at threshing time, but just as surely in the end. So it is a difficult matter to tell just how much profit there is in a given crop. I venture to say that on a great many of our Ohio farms wheat growing in regular rotation pays and always will pay, when every thing is taken into account.

But I also think that it can be made to pay better in most cases—to be more successful. Let us talk over some of the ways in which there is room for improvement on many of our farms.

First in regard to the soil. Have you got what is called a natural wheat soil, such as is found in Stark county and many other parts of our State? If so, you are fortunate. You are ready for business, except, perhaps, that there may be some swales or hollows, or springy places, that need tile draining, so as to make all your field equally productive. This soil is the natural home of the clover plant also, another matter that you may well be thankful for. But now suppose you have a colder, heavier soil, such as is found in Northern Summit, Trumbull and Geauga counties, and other portions of the State. I can well remember when the farmers in this section grew no wheat, and little else besides grass. They thought their land only fitted for grass, and did no plowing until absolutely necessary to re-seed a mowing lot. But still it has been proven that these same cold clays, when tile-drained and properly tilled, will grow as large crops of wheat, and almost as surely one year with another, as the warm gravelly loams. It is now simply a matter of whether it will pay to tile the land and grow wheat. In all this section where twenty-five years ago a field of wheat was a great rarity, much is now grown, and often very good crops without underdraining. But there is too much uncertainty in the matter, and too much trusting to the season or to luck. If we want to do our best we must lessen this element of uncertainty, and tiles will do it. Also by tile draining heavy land we deepen the feeding ground of the wheat. Roots will work their way down into very hard sub-soil if it isn't water-soaked. The clover roots also can go down deeper and bring more fertility to the surface to feed the wheat and other plants, and if properly managed you will find your once heavy soil getting almost as easy to work and mellow and responsive as the soils that are naturally drained, and through which air as well as water passes freely. God gave man dominion and brains. In a very few years he can greatly change cold clay land where wheat culture at present may not be at all successful. It has been done time and again. I

had thick good wheat last season on my farm on heavy clay spots, where fifteen years ago nothing would grow. Tiles, clover and tillage did it.

But now we have done all we can to get the foundation for a crop—the soil in the right condition; what next? There should be enough available plant food in the soil to make as large a crop as the straw will stand up under. Do you shake your heads at that? Well, you wouldn't keep a work horse and feed him so poorly that he could only do half what he ought to, would you? No, of course not. Why keep land and go through all the motions of putting in a crop and furnish seed, and fall way short of the returns you ought to have just because the crop isn't half fed? But now do not be alarmed, I am not intending to tell you to put on manure that you have not got and can not get, nor to pay out half your income for fertilizers. Raise wheat in regular rotation, growing a heavy crop of clover (not timothy with a little clover in it) once in three or four years, save all the manure about your barns and stables without waste and properly apply it to your land, and let all your tillage during the entire rotation be of the most thorough kind, and any land that was originally good you can soon have rich enough for wheat. Of course we have land that is naturally poor, where success would be almost impossible; but where you find one farm of this kind you will find a great many that are called poor which are simply unproductive because not properly treated. The food they need largely goes to waste under or around the barn. The air isn't let into the soil and the water out. The renovating influence of a heavy growth of clover is not regularly felt.

Now, friends, these words are not mere idle talk. It is in just this way that your speaker has brought up a so-called poor farm that produced only eight bushels of wheat per acre and starved out every tenant. My land is tilled where it was needed. We grow heavy crops of clover once in three years and give them as good a chance as we do any other. All stock is kept off. Manure taken from a covered barn yard and cement floors is spread on any portions of the young clover after harvest that may seem a little behind in growth. Every thing possible is done to grow a thick, heavy sod of clover all over the field on every square yard. All the growth of the first fall is mown off and allowed to go back as a mulch to the surface. In such a sod there is fertility enough to grow a good hoed crop and still leave all a wheat crop can make use of. I have found more trouble from an over supply of plant food than from any shortage. I have had more than one crop of wheat that would have been better if it hadn't been quite so good. Part of my land is a gravelly loam? Yes, but I can show you just as good wheat on the tile drained clay. And, my friends, I pay out no money for fertilizers. I do not need to. I will not say that they do not ever pay. I have seen fields where under certain circumstances they made a crop. An unfertilized strip brought nothing. As a result every body buys fertilizers blindly, car load after car load the next fall. It is the fashion. This has happened right in my own town. But I do not believe our farmers are, on the average, getting ahead much by using fertilizers. Many of them could do far better. They could raise just as good or better crops and save the fertilizer money. If the land is cold and heavy put in the wheat early and give it a chance to make a strong fall growth. If you put it in late and the season is unfavorable of course the fertilized strip may be good wheat and the rest a failure. The crop must be fed. How is the cheapest way for you to feed it? Fertilizers are the easiest applied; sometimes it is wisest to use them, but in very many cases I should stop the leaks in the stable and buy more clover seed, and often times one could manage to raise as large crops as could stand up.

But there are other matters that will affect the result. A thorough and proper preparation of the soil is important. Probably the yield of Ohio could be increased five bushels per acre by more thoroughly preparing the soil alone. A kernel of

wheat is quite small. The roots thrown out are very fine and delicate. On ground half prepared, rough and lumpy, it is wonderful that the young plants can do as well as they do. To get the best results prepare the soil appropriately. For these delicate little plants it should be pulverized just as fine as possible and at the same time well packed, so there will not be any large air spaces between the particles of dirt. It wants to be fine, mellow and firm, but not hard. Notice the distinction. To get these conditions one can not sow right after plowing. If I plowed a clover sod for wheat I should do it about six weeks before seeding time and then cultivate, harrow and roll about once a week during all that time. Thus I would get the firm, settled, fine seed-bed that would make the wheat come up quickly and grow rapidly from the start. After potatoes or corn I should not plow the land, as there is not time to get it firm and settled again, but simply prepare the surface with cutaway and Thomas harrow and roller. I would not let a man plow my potato stubble for wheat for five dollars an acre.

Now, I am aware that on some soils, a heavy rain coming right after the wheat was put in, would run together and puddle the surface where it is so finely prepared and do more damage than if it was left more coarse. I have suffered some this way. But it is only occasionally that this will happen, while good, fine tillage pays all the other times. I will do my best and take the chances, but study the weather at the same time. If it is hot and muggy and threatening when I get ready to sow, I will wait till after the storm. My land is well drained and I will not have long to wait, as a rule. This one little care I have seen makes a decided difference in the growth of wheat. My rule is to work the ground, no matter how dry. But when it comes to sowing, I greatly prefer to put the seed into moist ground so it will start quickly and well. A good start is half the battle almost. I prefer to wait some days for this best condition of the soil, unless one is already too late. To prepare a seed-bed for wheat, a two-horse cultivator or cutaway harrow, a Thomas harrow and roller are all the tools I want. But I do want every one of these, especially the heavy roller. I harrow and roll down the soil, and then after a time, tear it up again, and harrow and roll, and keep at it until it is right. The cost per acre of tillage is not great, as such tools get over the ground pretty fast. Many a time have I seen wheat fields when I almost knew, from my own experience, that \$1 or \$2 worth more labor judiciously expended in better fitting the soil, would have brought a return of \$5. I like to so arrange my farming, that I will have time to attend to any job that promises more than 100 per cent profit. Tillage does not create manure, but it is a certain fact that it renders more plant food available, lets the roots come in contact with more particles of soil, and increases the crop just as surely as though you had put on manure. On newly cleared land, tillage is of far less importance. Virgin soil full of vegetable matter, is quite different from our old cultivated fields. Old men tell of what crops they raised with only a harrow to scratch the ground, and they are apt to think no more tools are needed now; but conditions have greatly changed. The wise farmer will not only have the best tillage tools of the day, but will strive to get back that virgin state of fertility and mellowness in his soil by the use of clover in short rotation, even to plowing it under, if need be.

But tillage isn't all; I must pass to other points. For the greatest success in wheat growing, one must have perfectly clean seed of a variety suited to his soil. Wheat never turns to chess any more than a colt grows up a cow. If there is chess in your wheat, either the seed has got in your soil and stays there from year to year, or you sow chess. Of course, a little chess or cockle in wheat will not make much difference, but it isn't business-like to have any—not one grain. Sow perfectly clean seed only. That is the best you can do, and don't stop short of it. It is some work to get every grain of foul stuff out, but it can be done. For ten years, I think, I

did not have one single grain in my wheat. Last year I bought some wheat from a distance to sow. It seemed clear, but when I came to drill it I noticed when too late to get it out that it was not perfectly so. This year I tried to clean it by running through the fanning mill, but for reasons which will be mentioned later it couldn't be done. I even wrote to the manufacturers and had new screens sent me to try and do perfect work, but it was impossible. It was what most people would call good enough, but it was not perfectly clean. So we spread a sheet over a table and picked over all we sowed by hand, spoonful by spoonful. Out of some 15 bushels we got perhaps a heaping tablespoonful of foul stuff. It was a job, but if it turns out that we did not leave one grain I shall be well satisfied.

I might tell you here the way we select our seed wheat. It is not done by grading, thus taking the largest grains out of our crop. Had we done this way the mill would have taken all the foul stuff out of the large wheat. No, I select when cutting the best spot in the field—the heaviest spot. If the whole field averages 36 bushels per acre probably this selected patch might yield at the rate of 40 to 50. When drawing in we take this last and put it on top of bay and thresh it first and save the grain for our sowing. And we do not even grade this wheat, but simply clean out a little of the very smallest and shrunken grains. Even if the wheat was badly shrunken in this heavy lodged spot, no matter we sow it. In 1888 I sowed wheat of this kind that I would have greatly preferred some of you should see if you had came along when I was drilling. Result, 33 bushels per acre of fine wheat. With the crop to back me I am not ashamed to tell of it. But there are so many points to notice that in explanation I can only say briefly that the largest individual grains of wheat in my fields grow where the wheat is rather thin and yields less than the average. The largest grains in the best spots grow on the short or partly filled heads. Thus grading would give me just what I do not want, if like begets like, as we know it has a tendency to do.

Now the variety: One variety may do much better than another on your farm, as you doubtless know. The ingredients being almost identically the same it is hard to see how this can be, but so it is. The same is true of other crops—potatoes, corn, strawberries, etc. Ever since it came around the old Fultz has done well for me, with selection of seed as I have told you about. Whether a newer variety will now do better I hardly know. I am trying to find out.

I have thrown out some hints in regard to the time of sowing. If the conditions are right, soil moist, etc., I would prefer to sow on my farm in northern Ohio, from the 10th to the 15th of September. On heavier land say ten days earlier. Last fall I was ten days later, but as all the conditions were just right and the weather afterwards favorable, I think I was about right. One can not have any fixed time. He must study the season and the need of the crops and do the best he can. He will miss it of course sometimes, but as a rule he will be the gainer. In our locality those who were away behind in the fall of 1889 had the best wheat. It will so happen about once in five or six years. Providence must look out for the unfortunate ones occasionally.

In regard to the depth of sowing simply use common sense. The wheat grains are small and do not need to be buried deeply. An inch is deep enough if the ground is moist. Very much deeper would exhaust the plant somewhat before reaching the surface where it can breathe. On poorly prepared ground, wheels behind the drill hoes to gauge the depth are an advantage. But with all the ground made as uniformly firm as mine is with harrow and roller, so firm that the horses when drilling hardly sink in at all, a good drill properly set puts the wheat in pretty uniformly and about at the right depth. I have tried the wheels 2 years. They insure perfect work when the conditions are not just right to do without them.

I own my own drill, so I can put in the wheat just at the right time. Although never putting in more than twelve acres, I can not afford to trust to hiring one. Our farming operations must be done at just the proper moment to insure the greatest success. Two or three days' delay when the conditions were just right might easily cause a loss that would half pay for a drill, even on my little farm. For the same reason I own my own binder, too.

The lay of the land has something to do with successful wheat-growing. You can not change that. No, but you can cover an exposed place with a light coat of straw, and help the yield, usually. About half of one of my fields has a northwest exposure. This field was put in wheat in the fall of 1888. The exposed side hill was covered lightly with straw as soon as the ground froze so as to hold up. This made the side hill nearly as good as the rest of the field—something unusual—and gave an average for the lot of 36 bushels. My talk has all been from my own experience. You have heard some of the ways in which I have tried to make a success of wheat-growing. There is plenty more to learn. And still W. W. Phelps, our minister to Berlin, in a recent speech, said: "The lowest grade of labor can raise corn, wheat and pork. It does not require the intelligence and skill and invention in which American labor surpasses the world." Shame on you, Mr. Phelps! And still, from one view of the matter, he is not so far wrong. The lowest grade of labor, perhaps, can raise 8 or 10 bushels of wheat per acre. But the same intelligence and skill and invention that Mr. Phelps allots to our American mechanics, if applied to wheat culture, would beat the world at that, too. The same intelligence, I say; but I don't know. I rather think the man who tries his best to be a thoroughly progressive and successful farmer has more use for his brains than the majority of our mechanics and manufacturers. If I were seeking a soft job for my head I don't think I should look for it on a thoroughly successful farm.

At present prices it takes about 18 bushels of wheat per acre to pay our Ohio farmers well for seed, labor and use of land. This without counting straw, just the money from the grain. If you raise 10 or 15 bushels it is a poor business, and thousands are doing just this. They say wheat-growing doesn't pay, and want to combine and raise prices. There is a better way, a way that individuals can do alone. Go to work, and in ways that I have told you above, you can on any soil in due time grow 25 to 30 bushels per acre on the average. We have men who are doing this, and better. Then you can show a net profit on the cost of production of about 50 per cent. Our national banks seldom make more than 10 per cent. Vast amounts of capital are seeking investments that are safe at 5 per cent. or less. The best business methods will bring you ten times this, even in wheat-growing. This isn't all preaching, for the writer has done better than this for a long term of years. Farming is all right. Poor management makes poor returns on the farm or any where. I know of no business on earth that I would care to sell my farm and put the money into.

PREPARATION OF THE LAND FOR A WHEAT CROP.

By T. L. BISHOP, GREENVILLE, O.

As it is one of the rules of our institute for each member to respond when put on duty, I am here at the call of your committee on program under protest, feeling my inability to interest you on this important subject. What little I shall say, will be from actual experience in trying to raise wheat on the farm where I now live, a part of which was a dense forest when I moved on it thirty-one years ago. It has

not all been a success with me, but when I failed to get as good a crop as my neighbors on the same kind of land, I tried to find the cause and then apply the remedy. In accordance with my experience there are at least four prerequisites in the preparation of the land for successful wheat growing. The first is good, at least, if not thorough drainage of all land that has not natural drainage. Sandy and gravelly subsoils do not need it, but nearly all of our clay and black soils need drainage, and that badly, as I have learned many times to my loss in portions of fields that were not drained. In very favorable years most of our lands will produce fairly good crops of wheat, which may sometimes deceive the careless farmer, and he may be deluded into thinking that his land is dry enough. But when the wet and freezing and thawing years come, then his folly is apparent. I would say then, that to sow a field in wheat that has not been fairly well drained, is to court failure at the start.

The best way to drain land—I suppose all farmers in this county are a unit on that—is by tile. To drain our lands well in this county, I would put the drains about three rods apart, sinking them about two feet deep. The most of mine are three feet, and they are still doing good service, a part of them having been in use twenty-four years without any attention, except keeping the outlet clear. I know the distance apart, and depth first spoken of will, on the most of farms, answer for all practical purposes. I never use any thing less than four-inch tile for any drain, as I consider small tile a cause of much disappointment in drains. This, I think, is as much as I should say on drainage, but will again urge the farmers to drain their lands as fast as their means will admit, as it will surely pay.

The next thing required after the land is drained is manure and clover to bring up the fertility of the soil. Much of our land begins to show the need of fertilizers of some kind to bring the soil up to the standard which is required to insure a good wheat crop in the worst of years. The first named fertilizer, barn-yard manure, can be had on the most of farms, only by keeping stock to utilize all the rough food—corn-fodder, straw and hay that is raised on the farm and having it well rotted, and then haul on every year.

Don't, for the mere pittance you will receive, allow one of these *land exhausters* to sit by any of your straw stacks to take the cream off your farm, and regret it when you see it is too late. The farmers of the state of Illinois sowed to the wind a few years ago in burning the straw on their wheat fields after the headers had taken off the grain, and in some sections have reaped the whirlwind, in quickly exhausting what they blindly thought was a soil not to run down.

I wish to say here, if you wish to be ready each year to prepare your land for wheat, save your straw and get it into manure, and apply to the land in the manner which I shall hereafter speak of, and expect to reap a crop where it is applied. Furthermore, it is almost an essential ingredient, in getting a good stand of another important factor in preparing the land for wheat, *i. e.*, clover, which is the cheapest of fertilizers known by farmers of this county. I can not be too enthusiastic in its favor. I would pronounce it one of the foundations for successful wheat raising. To get the best results in thin clay land, is to let the crop grow up and then plow under after harvest as soon as can be done, so the ground may have time to settle thoroughly. On good land, the first crop may be made into hay, letting the second crop grow until the middle of August. Then plow it down, rolling the ground each day, as you plow. By following this plan, much labor can be saved in getting the land ready to sow. My plan is, after the land is plowed and rolled, to haul all the manure we have fit for use, and apply to the poorest parts of the field. We do this work by hand, but a spreader would be much better, I think. But few of this county have them. After the manure is all hauled on the field, commence with harrow cutaway, or the best tool you can afford, not forgetting the roller; and get the land thoroughly pulverized several inches deep, before the season arrives for sowing. Don't let up on that field until thoroughly packed, and by the time you are ready to sow, the manure you have applied on the top will be thoroughly incorporated in the soil, just where it

can be utilized by the wheat plants as soon as it begins to grow. I will just say here, that much of our wheat land does not get one-half the labor it should have to get the best results.

A good crop of wheat can be raised on other kinds of land than clover sod. Some farmers reverse my plan by plowing the sod in winter or early spring for corn, then in the fall, sowing wheat in the corn with a one-horse drill.

Some of the best crops I saw last year were put in that way. We have, when the corn is not too late, been in the habit of cutting the corn and shocking it, then harrowing the ground well and drilling it in with a two-horse drill. This plan succeeds well when the fall is favorable.

The third necessity in preparing land for wheat, I have treated partially, in the second division of my subject, but will here again emphasize it; that the land should be broken as soon after harvest as can be done, and thoroughly compacted and pulverized before being sown. The time is here when we must, if we wish a good crop, put much more labor on the land than has been done in past years.

The fourth requirement and last of which I shall treat in this paper, is clean seed. This does not come directly under the heading of "Preparation of the Land," but it does immediately concern the success of a wheat crop. There is too much seed sown without re-cleaning. All wheat before sowing should be carefully cleaned, if for no other purpose than taking out all shriveled grains, that if sown will start a puny growth, especially so in a dry season. In sowing on rich lands care should be taken to select some of the stiff strawed varieties, as there will be a loss in the crop by lodging if soft strawed varieties are sown. To give a short answer to the subject, I will say sow all wheat fields in clover, even if you propose putting the same fields in wheat again, which, with the experience I now have, would say don't do it. Keep the land in clover but for one year, as the second season it would not pay to keep, as a rule, in this section. Keep stock enough to consume all the rough food on the farm and take care of all the barn-yard manure, hauling it on the fields as fast as fit for use. Top dressing the wheat land, use clean seed, sow medium early. Use commercial fertilizer only after you have carefully saved all the stable and barn-yard manure you can, and have applied it on the poorest parts of your fields. By doing this, if you fail to have bread and seed at the next harvest, you will at least feel that it has not been your fault.

THE USE OF RYE ON THE FARM.

By JOHN M. JAMISON, ROXBELL, O.

[Read before the Ross county Farmers' Institute at Kingston, December 12, 1891.]

In beginning, a word as to the history of this plant, so closely allied to wheat, the extent of country in which it is cultivated and its general use. As compared with wheat it is of recent origin; however, history does not plainly define the date that it first came in use.

It will grow in any climate that wheat can be grown, and in climates too far north for the profitable cultivation of wheat. Its growth in the United States, as compared with wheat, is comparatively limited. In 1886 its value as a grain crop in Ohio was \$400,000, while the value of the wheat crop was over \$29,000,000.

In the United States, for the ten years previous to 1891, its average value per acre was \$8.27, that of wheat, \$9.95. For the same period the average yield per acre was 11.9 bushels, that of wheat, 12 bushels. As to yield, this is a better showing than is credited it by the general farmer.

On account of the hardy nature of the plant, it receives the least care in cultivation of all the cereals. If the whole story of its value was contained in the value of the grain, we could not have much to say for it as relates to the United States and Great Britain. In the latter country it is used as a forage crop for cattle and horses, and is sown after the root crop is exhausted, to graze before clover and lucern are ready for grazing.

It is the principal cereal in all the northern parts of Europe, Scandinavia, Russia, and northern Germany. Its value, as measured by the amount of gluten it contains, stands next to wheat. This explains its cultivation in northern latitudes unsuited for wheat.

Rye, or black bread, is in general use in northern Europe. It is the bread of the serfs of Russia, and for the lack of it millions are now in a starving condition. This black bread soon takes a sour taste, exceedingly unpleasant to those not accustomed to it. For this purpose rye finds little use in America. During the war it was used for bread, to some extent.

We have been acquainted with the use of this plant on the farm from our earliest knowledge of farm crops. Our belief that its value in some shape as a farm crop is not understood or appreciated, leads us to use it as the subject of this paper.

It is the universal cry that our lands are deteriorating in fertility, and the aim of every farmer should be to stop this. Any plant that in its use can benefit the land should receive the consideration of the farmer.

The ruling law of nature seems to be to cover the soil with a vegetable growth of some kind, and it would be well for the farmer to copy this in the management of his land.

The use of rye for this will claim our attention first. When corn follows corn the land lies uncovered for months, losing valuable properties by washing, leaching and evaporation. Much of this can be prevented by sowing rye at the last cultivation of the corn, or immediately after the corn is cut. As to sowing at the last cultivation, it is not always a success, the dry weather and the shade of the corn sometimes killing it, but if sown after the corn is cut it is sure to grow, its hardness pushing it on every warm day in winter when wheat will not grow.

If sown immediately after corn cutting, when the cutting is not too late, it will make a good growth before winter, and before the blue or other grasses are ready for use in the spring it will often be six inches to one foot in height; and by the time to turn the land for corn it will be a foot and one-half high, and under favorable circumstances, by May 10 it will be out in head, the growth most suitable to turn under for green manure. In this connection we will speak of our experience in using it for this purpose.

We do not remember the year, but it was sometime in the seventies. We plowed a stubble field in July or August, the best land we have, worked it down in splendid shape and about the first of September drilled two bushels of rye to the acre, expecting to get a rank growth for fall pasture. The fall proved to be a dry one. The rye did not make sufficient growth to cover the land. The hot days, followed by the cooler nights and dew, caused it to rust so badly that in walking the field the rust would cover our shoes, but before spring it recovered itself and came on nicely. The land was wet in some places, and in these wet places the rye started slowly. It was fully ten days later than that on the higher, dry ground.

We waited before starting the plow till the rye was out in full head, then it was as high as the horses' backs. In breaking, we used three horses, and dragged the rye under with a heavy chain. As it was dry weather at this time, we found it a very difficult job to accomplish this with any degree of satisfaction.

When planted to corn, the soil was so dry that it was almost impossible to follow the guide work of the planter, but soon after planting, there came sufficient rain to bring the corn up, but never sufficient while the corn was being cultivated to thor-

oughly wet the soil and mass of rye plowed under. The result was about one-half a crop of corn, while those around me had a full crop of extra quality.

Also, we became the laughing stock of the neighborhood. So much for reading agricultural papers and learning how those down-east farmers bring up their land. That one experiment killed the reputation of rye as a green manure crop in my neighborhood. The fault was not in the rye, but in the failure to get a soaking rain immediately after plowing; or had the land been drained so the plowing could have been done ten days sooner, the results would have been entirely different.

If it was our custom now to follow corn with corn, we would most certainly try the experiment again, and make it win; if we husked our corn from the stalk and let the cattle clean up the fields, we would have faith enough in the value of rye as a forage crop to sow it at the last cultivation of the corn, that it might at least form part ration while the cattle were in the stalk fields. Many farmers sow it for fall, winter and spring pasture, and are loud in praising it. Sometimes it is pastured quite short before plowing. In this case the roots are of great advantage to the soil, keeping it open and making it easy of cultivation. All stock is exceedingly fond of rye; the ranker the growth, the better they appear to like it. Farmers are always careful in the spring in making the change from dry feed to green. When the stock go out to the pastures, they want the grass to have a good growth, and warm, sunny days, that it may not be too washy in its nature. Even then it is best to avoid deleterious effects by letting the stock out a part of a day at a time.

With rye there is no need of this precaution. The stall-fed ox can be turned from his stall into rye of the rankest growth, without any dangerous effect. Stock will eat rye close to the ground before they will eat clover of the finest quality immediately adjoining it. We know of no plant better for winter grazing of swine, or for early spring grazing for ewes and lambs.

We will give another experience. The summer of '83 found us with a field that was part meadow, part corn and part wheat. It was our desire to pasture the whole field the next year. The wheat was a failure, as well as the clover sown in the wheat in the spring. We resolved to plow the wheat land and sow to rye, which was done, and drilled to rye at the rate of one bushel to the acre. It should have been two. At the same time we sowed clover from the grass seed box of the drill at the rate of 10 pounds per acre. This was done the 15th day of August. The rye and clover came on well, the clover having fine leaves before winter, and with the rye protection, came out all right in the spring. The part of the field in corn was sown to rye late, probably the last half of October. On this we sowed clover the 15th day of April, the rye having made a slow growth. We held the stock off the field as long as possible, to give the late rye and clover a start. When the stock went on, the early rye was very rank and about 15 inches high, the other not one-half so good. The gate from the lots opened into the early rye, but the stock would pass through this and graze the late sowing. This they continued to do till the early rye began to fill, then they all commenced feeding on it, and kept on at it till they had consumed the last head.

We never had young colts and their dams thrive better than they did that spring. The clover in the early rye made a wonderful growth, and by the time the rye was eaten it was coming out in bloom, 18 or more inches high.

Now, about the clover sown April 15 h, in the late rye, that the stock grazed so persistently early in the season. It proved to be a better stand than that sown in wheat in other fields. The stock's tramping did not appear to injure it in the least. One more fact in reference to this field. The winter of '84 and '85, with its freezing and driving winds, killed out about two acres of grass, principally clover. In March we found these bare places in excellent condition to work, so loose that we could stir it with our foot, two or three inches deep. On these two acres we drilled four bushels of rye, also clover and timothy. The rye grew remarkably well, the stock grazing it very close, scarcely allowing a stem to go to seed, which

it did late in July. We also secured a stand of grass on these bare places that has stood to the present time.

Before the days of improved machinery for harvesting grain, rye was often sown instead of wheat, as a crop to start the grass in. Instead of cutting the rye, it was hogged down, for it seldom pays to cut rye for the grain. This year may be an exception to this rule. There is a good deal in knowing how to hog down a crop of rye to get the most out of it. Spring pigs will nearly starve on it, and to be a paying crop for grown hogs, certain conditions must be observed. First, the rye should fall and lie on the ground to soften. Second, there should be an abundance of nutritious grasses—a good crop of clover is the best. Softening the rye makes it digestible. The clover aids this, as well as balancing the ration. One year we got a return of at least \$10 per acre from rye hogged, leaving all the straw on the land.

Now, something about it as a food after it is threshed. As hog feed unground, we regard it as of little value; whether soaked or not, hogs gulp it down without breaking the grains, and receive but little benefit from it. If ground to be fed alone in the form of slop, it should not be ground fine, for it is almost impossible to handle rye flour in making slop on account of its sticky nature. But if the flour is mixed with an equal weight of bran, it is as easily worked as any other slop mixture. In this shape we regard it as one of the best foods we have for feeding hogs. There is no better addition to cut-hay or straw as chop feed for horses than ground rye.

Thin lands that will not bring a profitable crop of wheat, will often produce a paying crop of rye as pasture, or to hog down, at the same time building up the land. Hill-sides that machinery can not be worked on, can be seeded to rye for above-named purposes, and as a protection to young grass. It is also useful sown on land liable to wash, as a help to hold the soil till permanent grasses get a hold.

We have spoken of early sowing as well as sowing in October. It can be sown early in November, and make a good crop. There is no doubt that the greater care taken in seeding will bring the better crop. Still, there is no crop that can be seeded with as little care and bring as good returns. We have known three crops from one sowing, but neither of the volunteer crops are as good as the first crop. It can be sown on land too wet and cold to produce good wheat, and yield good crops.

With these facts in reference to it, it is easy to see its adaptability to a general use on the farm, uses that should not be ignored by the farmer that would keep his land in good tone and improve it.

POINTS OF ADVANTAGE IN CROP CULTURE.

BY J. F. KELLER, NEWARK, O.

Advantage is something gained. In order to fully understand the meaning of the subject we are about to consider, we will change the wording as follows: "Methods by which something is gained in crop culture."

There are two ways by which we may secure a gain. First, by making use of such mechanical methods that the crop is produced at a minimum expense. Second, by making use of such methods of culture that not only larger yielding crops are grown, but by superior methods. We practically defy the various contingencies to which our farm crops are subject, and which so often blight the hopes and replete the resources of the industrious husbandman, and instead of frequent crop failure we are assured of at least a fair reward for our labors every season.

First we will speak of the mechanical methods by which we gain something in crop culture. The only recourse left the eastern farmer by which he may success-

fully battle with competition from the great west of almost unlimited resource, and which has for many years past much reduced the profits of eastern agriculture, and which now stands a menace to the future, is by cheapening production, lessening cost of producing an article, and is equivalent to getting a good price for the article when placed on the market. Proper conveniences for crop culture help to do this. The manufacturers possessing the means to purchase all the latest improved labor-saving and convenient machinery, and introduce into the business all the latest methods in manufacturing, drives to the wall the smaller concerns not supplied with these advantages. The practical housewife knows the advantage and comfort of a well-planned convenient house, especially a kitchen that is well supplied with the various convenient arrangements that come into play while in the discharge of her duties. The practical farmer sees the advantage gained by having his fields properly laid out, his farm buildings conveniently located, and the interior so planned and arranged and supplied with such apparatus, that the labor of caring for the stock is not only lessened, but is more pleasant and agreeable. I am sorry to note that the average farmer is so indifferent to the pleasure and profit derived from careful, thoughtful attention to the matter of farm conveniences. The neglect adds so much to the burdens of the farm, and makes farm life laborious, monotonous and despised.

We will now speak of conveniences that have to do directly with crop culture. and when we think how long we were without them, though we were the first to establish the value of many of them, when they were so available and cheap, we are surprised that we failed to profit by their use so long, and are impressed with the correctness of the logic of Josh Billings, who said, "All men are fools in regard to some things."

Small fields were convenient when the corn was planted in little patches among the stumps and cultivated—what little cultivation it got—with the hand hoe and single-horse cultivator, and the wheat sown broadcast and brushed in, or covered with the ancient typical ox harrow, supplied with wooden pegs instead of iron teeth, and the crop harvested with sickle or cradle. If a farmer would follow such methods to-day his finances would soon be up for repairs. There is a better way. We have taken many steps in advance of such methods. We have found that much of the improved rapid working and somewhat cumbersome and complicated machinery of the present day is used with economy and profit, and are a necessity in cheap production; provided, we are prepared with proper conditions for their use, if not much of the advantage that should be gained by them is never realized.

Have your fields contain not less than twenty acres—thirty would be better. Have them twice as long as wide. Then fully one-fourth more work can be done in a day than if the fields contain six to ten acres, and with no greater expenditure of horse power. It is as worrisome on teams to manipulate heavy cumbersome machinery in turning corners as to utilize the time and labor in doing actual work. Since we have enlarged our fields to twenty-five acres, we can now break (with three horse teams) two to three acres per day; plant fifteen to twenty acres of corn; cultivate twelve acres; cut and bind fifteen to twenty acres of wheat. Formerly, when our fields contained eight acres, one-fourth to one-third less was considered a good day's work. The only drawback to long fields and straight rows of corn is, that to ride machinery back and forth through these long fields, the work becomes monotonous. Mr. Terry, in one of his lectures, tells us he whistles "yankee doodle" to while away the time as he cultivates his long straight rows of potatoes. We shall try Mr. Terry's plan next season, if we can receive instruction in the art from him in the mean time. Large fields help to solve the difficult fence problem. Fence is expensive, both in first cost and needed repairs; besides, it occupies much ground space that should be producing something of value instead of laying waste a harbor for noxious weeds, bushes, briars, etc. You say you grow cattle, hogs, sheep, wheat, corn, hay, etc., and must have several fields. Your grain crops and hay will be more conveniently handled if no fence separate them. You can fence your pasture with

a portable board or temporary rail fence, and move it yearly to suit the land you wish to pasture, cheaper than to maintain permanent division fences. I would not have my farm divided into small fields if the fencing was done gratis, repairs made, and the fence rows kept trimmed.

The second point of advantage in crop culture is in the use of three-horse teams, instead of two in a large portion of farm work. I can not afford to lose one-third of the hired man's time by using two-horse teams; three horses in the team will do one-half more work per day, with far less fatigue to the horses than if only two horses be used. We use three horses to the plow, harrow, roller, binder and to the wagon when the roads are bad, or heavy loads to be hauled.

The third point of advantage in crop culture is to be provided with a reasonable line of first-class farm implements. As cheap as good farm machinery is at present, it is poor economy to continue the use of inferior tool—those heavy of draft and doing poor execution—hence, requiring more labor of man and team, and at best with an abundant expenditure of this. The work done is of inferior quality. If we are prepared to give our machinery proper care when in use and out of use, money judiciously invested in good farm machinery will be found a profitable investment. Our machinery, by careful use, and carefully housing the same, return their cost several times over during their service.

This machinery, exclusive of wagons, buggies, carriages, etc., costs about \$1,000, and if the investment amounted to double the sum, we believe it would be a paying one for two reasons: First, the rapidity with which our crops are handled, second, the superior manner in which the work is done. To illustrate the advantage of doing work rapidly by the use of good machinery: One spring we checked-rowed 100 acres of corn, employing one man and two horses, while a neighbor planted 12 acres by hand, employing three persons and one horse. We harvested 90 acres of wheat while another neighbor harvested 30 acres with an out-of-date broken down binder. These two examples tend to show the economy and advantage gained in crop culture by the use of good farm implements. However, if you are not prepared to give your machinery good care you will find them a very expensive luxury.

We will now discuss some points of advantage in actual crop culture: First, breaking the soil; there is nothing that bears more directly on the favorable results of a crop than thorough and systematic preparation of the soil before planting. I am convinced the best cultivation we can ever give a crop is before it is planted. My experience in fall plowing for spring crops is not favorable to the practice. Six years ago one-half of a clover sod field (to be planted to corn the following spring) was plowed in the fall, balance in early spring. The fall-plowed portion was cultivated both ways in spring with two-horse cultivators, harrowed, rolled, and harrowed a second time before planting. It required fully as much work to prepare the fall plowing as to plow and prepare the balance of the field in spring. The soil on the fall plowing below where it could be stirred with the cultivator, became very hard when dry weather came on, hence, that natural law—capillary attraction or absorption which is of such material benefit to crops in the time of drouth by bringing up moisture from the depths below—was handicapped in its operation by the ground becoming hard, and as a result the crop suffered more from drouth than on the spring plowing. The corn on the fall plowing developed more slowly and showed a weakened vitality through the whole season, and yielded probably ten bushels less per acre than on the spring plowing. There was also a noticeable difference in the following wheat crop in favor of the spring plowing. This year, after a lapse of five years, the corn on the fall-plowed portion of the field was less vigorous and healthy, denoting that the soil was permanently injured by being plowed in fall. Probably the results of the experiment would have been more favorable if the following winter had been cold and dry, instead of open and wet as it was. A neighbor who experimented in fall plowing for potatoes abandoned the practice after a two years' trial.

Very loose soils are no doubt benefited by being plowed in fall for spring crops. But, by plowing stiff clay soils in fall the earth particles become fused together, the soil gets runny and sad, destroying the small capillaries, which are important in admitting air into the soil, and also in conveying moisture by absorption from below. Fall plowing is a universal success on all soils in one particular only by destroying insect germs which, if left undisturbed, will develop into insects, which many times seriously damage spring crops. I would recommend that all sods, either clover, timothy or whatever kind, be broken as early in spring as possible. The advantages gained by so doing are as follows: First, the soil being more lively and pliable, early a better furrow can be turned and with much less labor for the teams; also, the weather being cool a much larger day's work can be done. Second, if the soil is subject to hard freezing after being plowed, it mellows, and is much more easily reduced with the harrow at planting time than if plowed later; also many insect germs are destroyed by the frost. Third, the soil has time to settle by natural forces which is superior to any compacting we can give by artificial means. Fourth, the sods have time to decompose, both the matter contained on the surface and the roots in the soil, which form humus or vegetable mould, which greatly assist the crop in its early growth. Fifth, ground plowed early lays in a store of moisture to be drawn upon in time of drouth. Stubble ground for corn should not be plowed until near planting time, for the reason that after the soil has produced one crop, much of the humus has been removed, and in case much rain would follow plowing the soil would settle and get hard, as there would be little humus in the soil to keep it lively and loose.

Another advantage in crop culture is to have a deep soil. All of our standard farm crops are benefited by a deep soil. Formerly, we plowed our ground six to eight inches deep, but have gradually deepened it to nine and ten inches, and our crops are now proportionately larger. Certainly the increase is not altogether owing to the increased depth of our soil, but we are inclined to assign this reason in part. Where the soil has proper drainage, deep plowing is alike beneficial both in wet and dry seasons. In wet seasons, the superabundance of water is carried rapidly below the crop roots. Hence, the crop is less subject to damage than if the water be held near the surface. Also, a deep soil carries the water nearer the source of drainage than a shallow soil, which is a slight benefit. Though when drainage is imperfect, the soil should be plowed shallow in order to keep the excess of water near the surface, where it will either run off or be carried away by evaporation.

A deep soil is an advantage in dry seasons for various reasons: First, it has greater capacity for producing a large crop than a shallow soil, even if both soils are alike in mechanical condition, and possessing the same degree of fertility. Second, deep soils store up a vast amount of moisture to be drawn upon by the crop in time of severe drouth. A soil nine inches deep will furnish twice as much moisture for the use of the crop in dry weather that a six-inch soil will. Capillary attraction is much more operative in supplying moisture from the subsoil in deep than in shallow soils. Deep soils furnish an opportunity for the crop roots to go deep to obtain food and moisture (as it is well known that plant roots tend in the direction of available food supplies). Hence, if the fertilizers be plowed down, the plant roots tend downward and suffer little from the contingency of drouth.

Unbroken earth may contain as much fertility as the same amount of soil, thoroughly pulverized, though a soil composed wholly of clods is unproductive because fertility is sealed up. Plant roots can only secure nourishment from the soil when coming in contact with finely divided earth particles, and when air and moisture are contained in the soil in proper proportions and quantity. Consequently, the elements of fertility assume a gaseous form (the state in which all plant food must assume before it can be assimilated by the plant roots). Hence, the importance of a thoroughly pulverized soil.

The first important step in preparing the soil after plowing, is to bring the clods

to the surface where they may be acted upon with roller and harrow. Three implements are well calculated for the purpose—the disk, cutaway, and spading harrow. We first go over our plowed ground twice with the spading harrow. This lifts the clods to the surface and works the pulverized soil down. Next we roll with a cart-roller, and follow with a Scotch harrow; and put the finishing touches on with a smoothing harrow. If one application with the roller is not sufficient to thoroughly pulverize all clods, two applications are given.

For corn, the soil should be moderately compact, and for wheat, thoroughly compact. There is no danger of getting the soil too compact for wheat, if the work be done when the soil is in proper condition. In preparing the wheat ground, always keep the ground rolled and harrowed as fast as plowed. Clods are never so easily pulverized as when fresh turned. And remember, each harrowing given the wheat ground between plowing and sowing, you will receive double pay for the work. If the corn is to be planted with a horse-planter, two conditions are essential. The soil must be reasonably compact, and the surface as level and smooth as is possible to make it, in order to deposit all the seed at exactly the proper depth. This is an important point in starting the crop properly, and if we get a good stand of plants and start the growth properly, we seldom fail to secure a good crop.

Ordinarily, corn should be planted in the latitude of central Ohio by the first of May. This gives ample time for the crop to fully mature before frost. The medium varieties of corn require 120 days to fully mature. Corn early planted, as a rule, produces a greater quantity of grain of better quality than corn planted later; though the latter grows the rankest, heaviest fodder. If your seed corn has good vitality, you need not hesitate to plant any time the soil can be got in condition after the 25th of April. Have had corn remain in the ground two weeks during a cold spell, and come on all right when the weather favored growth. Though if the vitality of the seed had not been strong, the probabilities are, a large portion would have perished.

Aim to secure a good stand of plants at first planting, and if the stand is fair, re-planting will not pay. The development of the grain will adjust itself somewhat to the productive capacity of the soil, regardless whether the hills contain two or four stalks. If two stalks, all the ears will be large and perfect; if four stalks, a large portion will be small. The results of the crop depend largely on the proper planting of the seed, and the best way to do the work that we are yet acquainted with—which in bounds of economy—is by the use of the two-horse planter, whether the corn be drilled or check-rowed. The late improved planters do the work perfectly either way.

For many years a notion prevailed that seed should be deposited in the ground to a depth corresponding to the size of the grain. By experiment and experience this is shown to be erroneous. According to that rule, corn should be planted five or six times as deep as wheat, which is not the case. Plants, in their first stages of growth, receive their nourishment from the seed as it decomposes, until it can throw out roots sufficient to absorb nourishment from the soil. And, as plant-roots develop but little until the plant appears above ground, it is important that the seed be deposited near the surface, so that the plant may quickly come up and develop above ground, and from roots sufficient to continue growth without cessation, as the seed passes away by decomposition. When the seed is planted deep, the grain decomposes before (or soon after) the plant reaches the surface. Hence there is no root formation to sustain growth. As a consequence, the plants appear weak and spindling, and much time intervenes before the crop takes a second start in growth. We should so prepare our soil and plant our crop that there will be no cessation in growth from the time the seed germinates until the crop is mature.

We have experimented some in planting corn at different depths. The result is, at four inches deep about 50 per cent. of the plants came up; at three inches, 80 per cent. At both these depths the plant showed signs of exhaustion, and the after-

growth slow and uneven. At one and two inches the results were about the same. All the seed germinated and came up and grew from the start. In early planting it is especially important to cover the seed as lightly as possible, as the soil near the surface is warmer and the seed will be quickly and favorably affected by slight sunshine and warmth, which, at best, the plant gets less of than it needs in early spring. While, if the seed be planted deep, the soil below being cold, germination is slow, and much of the seed perishes before germination takes place. The later corn is planted, the deeper it may be planted with safety. We now aim to plant our corn and sow our wheat as near one inch deep as possible, whether the soil be wet or dry, and the stand of plants secured by both crops is better than formerly, when deeper planting was practiced.

The cultivation of the corn crop should begin soon after planting. The three important objects of cultivation are: First, destruction of weeds; second, to furnish a mulch for the crop in the form of loose earth; third, to prevent crusting of the soil after hard rains, which, if allowed to form, prevents free circulation of air in through the small capillaries. It is as important that the soil about plant roots be supplied with a small quantity of air as the lungs of animate beings to be supplied with it.

Weed seed will not germinate readily in loose earth, and in case they do, are easily destroyed about the time the plants appear. Hence, the importance of commencing to cultivate crops early. One harrowing before the corn comes up is more effective in keeping weeds down than any single cultivation that can be given afterward, and is done with one-half the labor. If the ground becomes hard from frequent rains, the first harrowing should be given with a Scotch or straight tooth harrow. If the ground remains loose, the smoothing harrow is not so liable to disturb the seed, and is equally effective. If the soil remains reasonably loose, the corn may be harrowed after coming up (even to a height of four or five inches) with a smoothing harrow, and not more than 5 per cent. of the plants destroyed. The harrowing sometimes makes the crop look a little off at first, but a day or two puts it all right again. If the soil is hard from frequent rains, harrowing at this time does more harm than good, and work with the cultivator should be immediately commenced. Two workings with the harrow and five with the cultivator, if properly done, and at the right time, are sufficient to grow a good crop of corn any season, and if we fail with this number of workings, we would not secure a good crop if we gave double the number of workings.

Level or surface culture is becoming popular, and the results of our experience in this matter leads to the following conclusions: For dry seasons, level culture is best; for wet seasons, ridge culture. In dry seasons level culture has the advantage; when showers fall the water settles into the ground evenly over the whole surface of the ground, while if the surface was ridged it would settle in the furrows and run off, leaving the ground about the crop roots dry; also, by level, shallow culture none of the crop roots are cut off, which is an advantage. The roots of vegetation should not be disturbed in dry weather; to do so seriously injures the plant, but in wet seasons, cutting the plant roots does little or no harm, and besides there is a gain at such times by ridge culture, by the furrows carrying the surplus water off rapidly. In case of dry weather, there is serious loss of moisture by having the ground loosened deep and left in ridges, as then too large a volume of air is admitted into the soil, which has a tendency to dry it out, and a larger surface area being exposed to the action of sun and wind, also tends to rapid evaporation. Some cultivate deep, believing it an advantage in retaining moisture, and also that crops grow better when the soil is kept very loose. Both are mistaken ideas. The main advantage in cultivation is to furnish the soil and crop with some kind of mulch, and to prevent formation of crust on the surface. It is well known that capillary attraction furnishes an abundant supply of moisture in dry weather. If the surface of the ground is covered with a mulch of some kind, remove a stone, board or a bunch of straw lying

on the ground, and you will find the ground moist beneath, even in very dry weather. If we could mulch all of our crops they would need very little rain. The only practical way of mulching all of our cultivated crops is by supplying a mulch of loose earth, and one or two inches is more effective than one of five or six inches, as the loose soil would probably dry to near its full depth. Capillary attraction is most operative in compact (not hard) soils. Hence, moisture follows the small capillaries in a compact soil as far as they continue unbroken, but when they are broken by surface culture the moisture rises to the loose surface soil, where it is held available for the crops. Experiments at our State farm resulted in a better yield of corn where the crop received no cultivation—simply the weeds kept back by shaving the surface of the ground as occasion required, than where the crop received cultivation. In a wet season cultivation is of no great benefit to the crop, except to keep weeds down, but in a dry season I want a mulch of two inches of loose soil, to induce capillary attraction and prevent rapid evaporation.

Planting corn in drills instead of check-rows has strong advocates, yet, for some unexplained reason, has not become universally popular. The improved corn machinery we now have materially assists in handling drilled corn. We now have machines that will drill corn as rapidly and as perfectly as if planted in check rows. Our cultivators, adapted to level culture, do perfect work in drilled corn.

Horse corn harvesters are of more practical value in drilled than in check-rowed corn. There are three drawbacks to drilled corn that seem to overbalance all advantage gained by this method of planting. First, the crop is shaded too much. When fully developed there are few open spaces large enough to admit sunshine that would work much benefit to the crop. Corn is a native of a warm climate. Hence, needs all the sunshine it can possibly get in our temperate climate, and any thing that tends to deprive it of an abundance of sunshine is detrimental to the crop. Second, unless the soil be at least reasonably free from weed seed, even with the best of cultivation, there is danger, some seasons, of a necessity arising for more or less land work, though our drilled corn this season was cultivated with as much ease and kept as free from weeds as that planted in check-rows. A wagon bed would hold all the weeds in thirty-two acres of corn. The third drawback to drilled corn is the difficulty with which the crop is harvested if it falls down before cutting time.

The following is our plan of culture by which we kept our drilled corn free from weeds with no hard labor: We harrowed twice before the corn came up, then, as soon as all the plants appeared above ground, the earth was thrown slightly away from the rows. The second cultivation returned the soil to its former place. By this time a few weeds appeared in the rows. This time a shovel-cultivator was used to throw the soil to the row just enough to cover the weeds. The next cultivation again leveled the soil down. In the last cultivation the soil was thrown slightly to the corn. So far as we were able to determine we gained nothing on the crop by having it drilled, either in quantity or quality of grain. On the contrary, I believe the per cent. of small ears was greater than would have been had the corn been check-rowed. Experiments made at our State farm show that the yield of corn in quantity is about the same whether the stalks stand twelve inches apart in the row, two stalks every twenty-four inches, three stalks every thirty-six, or four stalks every forty-eight inches. The per cent. of small, unmerchantable ears was greatest in the corn drilled one stalk every twelve inches. The largest yield and best quality of corn was also where it was planted in check-rows three feet apart each way with three stalks to the hill.

I have not mentioned all the points of advantage in crop culture, though probably enough to show that agriculture presents a field where wide range of thought, experiment, untiring energy and industry may be used to excellent advantage in arriving at the best results in the many different phases of the business.

CLOVER AND FERTILIZERS.

BY V. E. WAMPLER, DAYTON, O.

Our chemists tell us that ammonia, phosphoric acid and potash, in available forms, are the three lacking elements, and these in different proportions to the different soils. So, in our search for fertilizers, these are the elements that we must seek. And we must, in order to be successful in these days of low prices, get them in the shape that will give us the greatest possible returns for our outlay.

As a first principle in our search, we must have nothing but what contains these elements in such forms as to be available for our crops. Almost any soil contains enough of these three elements to raise maximum crops for a century, but in insoluble combinations; therefore, they must be available as plant food, as it is our plants and not the inert clay that we want to feed. And the first place we want to look to is our own farms. What have I that will add to the available plant food of my soil? What system of cultivation shall I follow in order to unlock these insoluble stores, should be the inquiry of the farmer.

In order to answer the first question we must know the elements of our crops in order to find which ones it is best to keep on our farms, and which ones we can best afford to sell. Here, again, we must call the chemist to our aid, and he tells us what elements our crops are composed of. Our S. B. A. has fixed certain values upon these elements as found in commercial fertilizers, so we will take those values as a basis, allowing, however, for the greater solubility of these elements as found in well-prepared commercial fertilizers.

Following out this line, we find that the manurial values of our prominent crops are about as follows, per ton of 2,000 pounds:

Grain—Oats, \$7.62; barley, \$6.76; corn, \$6.32; wheat, \$7.44.

Hay and straw—Clover hay, \$8.76; meadow hay, \$6.94; wheat straw, \$2.44; barley straw, \$2.79; oats straw, \$2.94; corn-fodder, \$3.25.

On reference to these tables we find clover the richest crop in fertilizing elements of any crop we produce, and at the same time, as we know by experience, one of the heaviest producers.

Now, then, in what way can we enrich our stores of plant food by the growing of clover? Certainly not by hauling off the hay and selling it. This would, above all other things, exhaust our lands, as it is manifest that every thing in the clover comes from the soil, and all sold takes just that much off the farm. The great value of clover lies in the fact that it is capable of drawing its food from sources and combinations insoluble to other plants, and also that it is able to draw a percentage of its nitrogen from the air. So, if we want to make our lands fertile with clover, we must either plow down the green clover, let it rot, or make into hay and feed to our stock, saving the manure to apply on the land. Joseph Harris, in his book on manures, says: "We can make our land poor by growing clover and selling it, or we can make our lands rich by growing clover and feeding it out on the farm, or rather we can make our land rich by draining where needed, cultivating it thoroughly, so as to develop the latent plant food existing in the soil, and then by growing clover to take up and organize this plant food. This is how to make land rich by growing clover. It is not, in one sense, the clover that makes the land rich, it is the drainage and cultivation that furnishes food for the clover. The clover takes up this food and concentrates it. The clover does not create the plant food, it merely saves it."

You will notice that clover does not supply any thing to the land; it merely assimilates what plant food is partially available in the soil, or is made so by cultivation.

But you say "thorough cultivation does not supply plant food. Where then is our supply to come from when our lands are already so poor that we can't get good

crops? True, enough, your lands may be poor in available plant food, but the poorest soil in Montgomery county contains enough nitrogen, phosphoric acid and potash in insoluble combinations to raise maximum crops for one hundred years or more, and it is this that we are after. In this Nature is our great co-worker; she says to the farmer, drain the surplus water off your land, plow it up, cultivate thoroughly, let me send my heat, light and air to penetrate every pore, I will dissolve these unyielding combinations for your plants. This is the only way in which our supply of plant food can be added to from the soil itself, but this is necessarily a slow process, and in these days of high-priced land we can not let our land lie idle for the sake of getting a crop every three or four years.

So we must look to something else. Chemists tell us that from eighty-five to ninety-five per cent. of the plant food in our crop is returned to us in the shape of manure when fed out on the place; and if it were possible to feed all crops grown on the place into stock we would lose but little of the plant food. This, however, we can not do, but we can consult our chemist again and sell such crops whose manured value is lowest compared to the market value. Well, says one, I see you put straw down at \$2.40 per ton and I can get six dollars for it; therefore, I will sell my straw. Just wait a moment. In feeding our stock, the best part of the manure we get is in the liquid state, and we must have our straw as an absorbent for this. In this way a ton of dry straw will be worth, when completely saturated, from \$8 to \$12. So, then, up to a certain point, it does not pay to sell straw, and the farmer who can come nearest using up all his straw in saving what would otherwise go to waste, is most nearly restoring to his lands what his crops have taken off. But in case of a surplus of straw, don't think you can make any manure worth while by simply rotting down your straw stacks. The stuff you get is a very inferior article—sell your surplus and buy such foods as oil-cake and wheat-bran. These have an unusually high manurial value; oil-cake, \$18.10, and bran, \$13.25 per ton. You will notice that bran is worth much more in the manure, weight for weight, than wheat itself.

Another great absorbent for liquids is corn stalks—in fact refuse corn stalks from the mangers, when the fodder has been cut in a cutting box (as it always should be), is an excellent article to use in stables, especially in case they are inclined to be wet.

Again, the position of our manure yards is another point to be looked at. You don't want it on top of a hill, or on a hillside where every thing can wash away, or, like some I have seen on a side hill, sloping to a water-course. It should be high enough next to the barn to keep water out of the stables, but the lower side should run into a bowl-like shape where the liquids can gather and you can apply your absorbents. And it should not be too large, not much larger, if any, than the space covered by the manure heap. Again, your manure heap is richer and worth more by from thirty to forty per cent. on April 1 than it is on September 1, and to haul it out in the fall to lay until spring for corn, as many farmers do, again reduces its value.

Now, then, to resume. In order to improve our lands, we must first drain when needed and cultivate thoroughly. This includes keeping the weeds down; sow plenty of clover to be used on the farm; feed as much as possible of your crops on the farm; save all manure carefully.

But even when we do all this we do not return as much as we take off, and we must depend on the store in the soil, that is being gradually dissolved, for our increase; and this being a slow process, our farmers say they do not want to wait a lifetime, so something else comes (I know you have all been waiting for it), that is, commercial fertilizing.

It seems as though an all-wise God has provided for all emergencies, and He foresaw our present condition and laid by stores for us to draw from. I can not

better tell this than has Mr. W. H. Bowker, of Boston, in a lecture before the Vermont Dairymen's Association. I quote from Mr. B.:

"We are taught that nothing in nature is wasted, but is simply lost to the uses of man, or a generation of men. It may be recovered at another age of the world, or by another generation. An all-wise Providence foresaw this, for, in order to make good this loss, He has caused great deposits of crude materials to be placed in all parts of the world.

"He has caused inland seas to dry up, and deposit, in that part of the world which we now call Germany, their contents of potash and common salt. He buried great forests in Russia and in the United States, from which to-day we are drawing oil and coal, and chemical salts which enter into plant food. He drove myriads of animals out of the sea on to the land in Spain, and in America, and, in this century, when we need them, we find them deposited as phosphate of lime, coprolites and soft guanoes. He made great pockets in Canada, into which he poured millions of tons of apatite, the mother source of phosphoric acid, and the predominant element of bone, and without which no skeleton of any living animal could be organized. He planted sulphur in Sicily, from which man by the aid of chemistry, manufactures sulphuric acid with which to dissolve this phosphate or apatite, and so make it quickly available for plants.

"He placed in different parts of the United States, in Massachusetts, Vermont and just over the line in Canada, great deposits of copper pyrites, or "fool's gold," from which this sulphur can also be obtained.

"He caused great deposits of organic matter to be placed under the equator in Chili, which by heat and moisture has been converted into chemical salt which we are now mining as nitrate of soda, from which we draw large supplies of nitrogen, the most costly part of all plant food.

"And so I might go on enumerating the different natural deposits of crude materials which directly interest the farmer as a source of plant food, and a means of recuperating the soil which has been taxed by generations, and by injudicious culture. Perhaps these materials which an all-wise Creator has placed in different parts of the world are simply the lost products, on the waste of a cycle of civilization which existed upon this earth before Adam entered the Garden of Eden, and by the shifting processes of nature—the upheaval of land and sea, the drying up of waters, has again been brought into use, and so rounding out a grand scheme of evolution and compensation."

In addition to these our manufacturers are ransacking every avenue of industry for waste matters out of which fertilizers containing the essential elements of plant food may be manufactured and nothing go to waste that can be used to advantage. All of our large manufacturers have chemists employed to analyze materials entering into the composition of their goods; even an authority like Prof. G. A. Liebig, whose works are standard, does not think it beneath his calling to overlook a fertilizer factory, and all the goods manufactured by the firm I now represent, have his supervision.

An experience of many years has taught us the value of well prepared commercial fertilizers; it has also taught us that there may be articles compounded and called fertilizers, something they are not. Our state agricultural stations endeavor in every way possible to give us the compositions of the various fertilizers offered the farmer, but they can only say how much of certain elements are found in the goods offered, but do not tell you in what state these elements are, whether the plant can use them or no, and this is the vital point. We have already stated an abundance of insoluble plant food in the soil, and what we want to apply is concentrated manures of such quality as will best bring about increased crops. In fact the analysis of the food furnished that is made by the crop itself is the only true one.

In buying our fertilizers it should be our aim to patronize only old established houses and experiment with new things sparingly.

Here again we see the verification of the old adage that the best is the cheapest in the long run, although our farmers have gotten the idea in their heads that because a \$25 fertilizer shows up as well as a \$35 that it is just as good—no greater mistake could be made. As a rule, you get double the amount of plant food in a fertilizer costing \$30 to \$35 than there is in one costing \$20 to \$25 per ton, from the fact that the labor, time, expense of manufacture, freights and commissions are the same and often higher on the cheaper than on the higher prices. The results obtained from the cheap goods are generally owing to the action of a large amount of sulphuric acid used in their manufacture, the action of which, if used in excess, is injurious to all soils. Should any farmer wish to test the truth of this assertion, let him try the cheap, highly acidulated goods on a plot, say for three years, beside a higher grade brand for the same length of time, and then plow his ground and sow a crop without any of either kind and notice the results.

In buying fertilizers, you want to see that the analysis given by the state reports does not fall materially below that guaranteed by the manufacturer, but don't worry if the estimated value of what you are buying is no more than what you are paying for it, or that John Smith's brand is estimated worth \$50, while it is selling for \$25. People don't sell gold dollars for fifty cents, and none but bunko sharps, etc., propose to give us something for nothing. What you want is available plant food, and that has a market value any place and at any time; so do not expect to get more than you pay for.

And again, no money you can lay out is better spent than the money you lay out for good commercial fertilizers, providing you have saved your barnyard manure—thoroughly cultivated and prepared your soil. And you should buy them with the idea that you will make a little more manure, farm your land a little better, keep another steer or two, sow a little more clover, because the fertilizer will enable you to do so; but if you take them with the idea that you can be a little more careless in your farming, sell your hay, straw and clover, and sow less clover, because you have spent a little money for fertilizers. In short, if you buy them as an end, rather than as a means whereby you can attain your end, you will be, as the slang expression goes, "in the soup."

CORN, TOBACCO AND ONIONS.

OUR CORN CROP—SOME ESSENTIALS IN THE CULTIVATION AND MANAGEMENT OF A CORN CROP.

By E. A. PETERS, GROVEPORT, O.

My mode of cultivating a corn crop may not differ in many respects from the ordinary method prevalent throughout this section of the country, yet there are many very essential things to be considered and practiced in the production of a paying crop of corn aside from the cultivation. My experience has mostly been confined to a black soil, underlaid with gravel. Although very flat and wet when it came into my possession, I have, by a thorough system of underdrainage, succeeded in getting it in a very good condition, mechanically, for the production of a corn crop.

I have seen so many farmers who, year after year, cultivate their land and persist in trying to raise a crop of corn where water will stand all through the winter season and till very late in the spring, so late that it is not possible to plow it in time to plant in proper season, but in their hurry to get through planting as soon as their neighbor, will rake over it with a harrow and plant among the hard, dry clods that have become sun-baked and could not be broken with a sledge hammer, and then console himself with the thought, "Oh, well, it will rain soon, and then I will take my roller and go on to it and surprise my friend across the way, who has buried several hundred dollars in tile draining his land and has it in such fine condition to plant." But, alas, day after day passes away and the looked for fine rain has not put in an appearance; the corn planted among the clods is still there in the same condition it was when planted. The field across the way begins to look green in streaks and behold, out comes the team hitched to a cultivator and the operation of tillage is again continued. The penny-wise farmer sees a bank of clouds in the west and says, "Ah! we will have a shower to-night, and then my corn will come up." And sure enough he did get it. It rained, it poured, and continued pouring all night. How do things look next morning? His farm is one vast lake, and if his corn is not up *now* it never *will* be. The friend across the way is, in a few hours, again plowing corn and continues to plow while it is first too wet and then too dry for his unfortunate neighbor. This picture, though it may be a little overdrawn, serves to illustrate to us the importance of having our land thoroughly and properly underdrained if we wish to raise a paying crop of corn, and the same condition will apply to any other crop.

Next in order is to so manage your land that the fertility is not exhausted more rapidly than it accumulates. For just as sure as you practice taking more fertility from the soil than is returned to it just so sure your crops will begin to fail to come up to the standard, and just so sure your land will deteriorate in value. This fertility can much more easily be retained in the soil than it can be returned after it has been exhausted. To retain it I would follow a rotation of crops, about as follows: After corn, wheat, after wheat, clover; always, if possible, leave in clover two years, then corn again. I would *not* advise more than two crops of corn and one of wheat, or one of corn and two of wheat before putting to clover again, and if two crops of wheat are to be raised in succession I find it pays to sow clover, even though it is to be broken up the same season for wheat, and I believe, though I have not practiced it, that it would pay to sow clover in corn in August, if you wished to follow next year again with corn. Besides rotation with clover, I manage to use all my rough feed, such as straw, fodder, etc., and generally buy some of my neighbors; feed as

much grain as is possible to what stock I can raise myself, thereby giving a considerable amount of barnyard manure, which is applied, with great care, to any clay or upland spots. I find that a proper rotation will, in most cases, keep my black soil in a good state of fertility without any other fertilizers.

I try to have my ground in the best condition possible before planting, using seed of my own selection, which selection is made when I am hauling to the crib in the fall. By that method of selecting seed, I believe I get the choice ears from my crop. It is then put in a rack made of lath, which is hung up close under the iron roof by heavy wires, which makes it rat and mouse proof, and where it will in a very few days get thoroughly dry, which I consider very essential to the production of a strong, healthy stock. Hundreds and thousands of dollars are lost annually by the farmers of this country, just by their own carelessness or negligence in not securing their seed corn in proper season and in a proper manner. *So much* depends upon good seed that will produce a strong, healthy stock, that a man would better pay ten, yea, twenty dollars per bushel for such seed, than to plant poor seed, though it be given to him. After planting in the best condition possible, two or three grains in a hill three and one-half feet each way, I generally harrow and roll, or roll and harrow, as seems to suit best, before the corn comes up, thereby preventing the possibility of any weeds getting a start, which I often think decides the battle in my favor. Begin to cultivate as soon as the corn is up nicely, which will be in a very few days, generally, all conditions being favorable, and continue to cultivate at intervals of about once a week until about the 10th of July, when it will be better to stop. The last time I would cultivate shallow and not too close to the corn, leaving the surface as nearly level as possible; in fact, I would advocate shallow and level cultivation throughout. And I find that a cultivator with four small shovels to each shank, eight in all, is the best tool I have tried. They stir the surface of the soil completely, destroying all weeds that may have started, and leave it in the best possible condition to retain moisture. I believe it is about the only tool needed in the cultivation of a crop of corn after it is once up. I never stop the cultivation of a crop in the proper season on account of dry weather, but would be careful to *not* stir the soil when wet; but just as soon as possible or safe after a rain, cultivate the whole crop.

Within the last few years, and more especially since *other* classes than the *farmer* have felt the effects of the depression in agriculture, I have frequently been asked the question, What does it cost you to produce a bushel of corn or of wheat, or a pound of beef or pork? and I confess, I have been puzzled in trying to give any thing like a satisfactory or intelligent answer, because I had not applied that business principle to my farm operations that I should have done, or that a shrewd business man in any other occupation would do. So during the season of 1891 I kept a strict account of all my farm operations, and am now able to tell what it cost me to produce a bushel of corn and a bushel of wheat for that particular year. I was somewhat surprised at the result, for I had heard farmers whom I thought intelligent and thoughtful men, make the statement that they could produce a bushel of corn for ten or eleven cents, and a bushel of wheat for twenty-five or thirty cents.

I found that I could not do it, even though I got a fair yield, and, as corn is my subject, I will give you a detailed statement of my expenses in raising 80 bushels of corn per acre on thirty acres. I expect some of you will want to eliminate the greater portion of the charges I have made against the crop, because so many of us are accustomed to figure our own labor very low, and the labor of four or five boys to be thrown in for good measure. I did not figure that way, for myself and two boys, 12 and 14 years old, did the work of raising the crop, and I charged good wages and board, if we did have to furnish it ourselves. Nevertheless, I will give you the report, and I am sure it will set some of you, who

have never figured on the cost of producing a crop, to thinking, which is the main object of this paper:

REPORT.

To breaking up 80 acres of ground, 20 days, at \$3.50 per day	\$70 00
" putting ground in condition to plant, 15 days, at \$3 00 per day.....	45 00
" planting three days, at \$4.00 per day.....	12 00
" 5 bushels seed corn, at 60 cents per bushel.....	3 00
" cultivating crop, 20 days, at \$3.00 per day	60 00
" cutting 750 shocks, at 7 cents per shock.....	52 50
" husking 2,400 bushels, at 4 cents per bushel.....	96 00
" hauling same to crib, 18 days, at \$3.00 per day	54 00
" rent of ground and taxes	200 00

Total cost.....\$592 50

Cr. by 750 shocks of fodder, at 10 cents per shock..... 75 00

Net cost in producing 2,400 bushels.....\$517 50

Net cost per bushel in crib, 21½ cents.

The December crop report of the Department of Agriculture gives a general summing up of the crops of the year, from which I take the following facts:

The number of acres of corn harvested in 1891 is placed at 76,204,415, and the total yield 2,060,150,000 bushels. This yield has only been excelled once before; in the year 1889 it was 2,112,892,000 bushels. The yield per acre for 1891 is the same as in 1889, viz., 27 bushels. This is three bushels more than the average for the last ten years. The fact is noted that while the population is less than four times what it was in 1840, the corn crop is nearly six times as large. The crop of last year is valued at \$886,439,328. The average value per acre last was \$10.98; the year before \$10.48. The average for the decade, 1880-89, was \$9.48; for the decade 1870-79, \$11.54. The amount estimated for this year, 1891, will not, in all probability, be realized by the farmers, because of the fact that these estimates are on a basis of over 40 cents per bushel, when in fact, perhaps, the greater part of the crop will be sold at much less than 40 cents per bushel, and a considerable amount was consumed by 3-cent hogs.

In 1870 we exported 1 per cent. of our corn crop; in 1880, 5½ per cent.; in 1890, 2½ per cent. The highest per cent. exported in twenty years was 6½ per cent., which was in 1887. The annual average is only about 3½ per cent., or about one bushel in 25, which has very little influence on the price. Taking the average per acre for the last ten years, which is 24 bushels, on the basis of my report, with a reasonable deduction for gathering that kind of a crop, it would cost me 62 cents per bushel to raise a crop of 24 bushels per acre.

In summing up, I am firmly of the opinion that no farmer in this section of the country can afford to raise corn at present market prices, unless he gets a yield of from 60 to 75 bushels per acre, and to attain this end, many of us would better undertake the cultivation of a less number of acres, cultivate it properly and in season, follow strictly the best rotation to produce the most paying results, and in so doing it would be but a short time till our farm would be under a high state of fertility, instead of so worn out that they would only produce an average of 24 bushels per acre.

[REPRINT OF FARMERS' BULLETIN NO. 6.]

TOBACCO—INSTRUCTIONS FOR ITS CULTIVATION AND CURING.

BY JOHN M. ESTES,

Special Agent of U. S. Department of Agriculture.

CULTIVATION OF THE TOBACCO PLANT.

The plant is first raised in seed beds till large enough to transplant, the same as cabbage and tomato plants. These beds should be properly located and carefully prepared.

SEED-BED ON NEW LAND.

Select a sheltered spot sloping gently to the south and well exposed to the rays of the sun. Upon this plat burn brush or wood until the soil is made hot enough to kill the seeds of grass and weeds. With a hoe or spade stir the earth two or three inches deep, but do not disturb the subsoil. If, in preparing a seed-bed on new land, an inch of the surface soil is removed or the subsoil is brought to the surface, plants will not grow. Rake and work the bed until the surface has been made mellow and fine; well-rotted manure spread over the surface and thoroughly raked in will promote the growth of the plants. Remove all roots and trash; run shallow trenches or hard-beaten paths at intervals of four or five feet through the bed, and dig a trench four or five inches deep on the upper side and at the ends; without this protection heavy rains will drift the seed and cover many of them too deeply.

One tablespoonful of seed will sow a bed ten feet square, which will furnish plants enough to set an acre. Mix the seed with dry ashes and sow evenly. Brush or rake in the seed very lightly. Compact the earth by treading with the feet or by the use of a light roller, leaving the surface smooth and even. Cover with light brush thick enough to slightly shade the plants and protect them from frost or drying winds. The brush may be left upon the bed until the plants are half grown to the size for transplanting. Leaves or trash which accumulate upon the bed must be removed. Something heavier, like pine or cedar boughs or cornstalks, may be used as a covering for the bed, but these must be removed soon after the plants are up.

SEED BEDS ON OLD LAND.

The practice is to burn the surface until the soil is baked half an inch deep. This is done to effectually destroy foul seeds and because the plants grow best, as many believe, upon soil that has been thus baked.

As soon as the bed has cooled off the soil is stirred and worked to a depth of three inches, being reversed as little as possible. A liberal application of well-rotted manure or commercial fertilizer is made, and the bed is worked until it is put in fine condition.

If the seed is sprouted before being sown, and the beds are covered with canvas, plants large enough to transplant may be obtained in from thirty to forty days.

HOW TO SPROUT THE SEED.

Upon several layers of woolen cloth spread the seed about one-quarter of an inch thick. Cover well with woolen cloth, thoroughly soak the whole mass with warm water, and set in a warm place near the stove. Keep moist with warm water. In three or four days small white spots will indicate germination. Thoroughly mix the seed with dry ashes and sow.

HOW TO COVER WITH CÁNVAS.

The bed should be five feet six inches wide, with a southern exposure. Place boards six inches wide around the bed, and to keep these on edge fasten by driving small stakes on each side, or drive stakes and nail the boards to them. Across this frame, at intervals of three feet, fasten narrow strips to support the cloth. Bank up with earth. Two widths of light cotton cloth sewed together will form the cover. Upon the sides and ends of this cover sew small loops of cloth or heavy twine. Stretch the cover over the frame and fasten the loops to nails driven at proper distances in the outside of the frame. The cotton cloth used for covering the beds should be a medium between the common grade and what is known as cheese cloth. The cover should be removed a few days before the plants are set out.

HOW TO HASTEN THE GROWTH OF PLANTS.

Set up a leach of well-rotted manure. Manure from the chicken house is the best. To one part of the liquid from the leach add three parts of water and sprinkle upon the plants. Strong liquid manure will injure or kill the plants, but if used at proper strength is the best fertilizer that can be applied.

Beginners are apt to make a mistake at the very outset in not raising plants enough.

PREPARATION OF THE SOIL FOR TRANSPLANTING.

Old land should be plowed to a depth of eight inches early in the fall. In February apply stable manure or commercial fertilizer, or both, and plow under to a depth of three or four inches. The last of April or the first of May, or earlier, as the season permits in the Southern States, plow the land again to the same depth that it was plowed in February, and with drag or harrow and roller pulverize it thoroughly. Sod land plowed late in the fall, or in the winter or spring, should not be replowed with the turn plow, but should be put in good condition with the double-shovel plow, cultivator and drag.

With a marker made for the purpose, lay off the land in rows three feet three inches apart each way, and with a hoe make small hills at the intersection of the rows. Instead of hills, "lists" or ridges may be made by throwing two or four furrows together with a light-turn plough drawn by one horse. The "list" or ridge thus made should be trimmed and patted with the hoe at the proper place for hills.

In preparing land for a crop of tobacco the soil should be put in such perfect condition that no future cultivation should be required, except to kill the weeds and keep the surface mellow.

TRANSPLANTING TOBACCO.

About the 1st of May, or as soon as warm growing weather, according to climate and season, is assured, the plants should be set out. Showery or damp cloudy weather affords the best time for doing this. When the largest leaves are two and one-half inches wide the plant is large enough to set.

Saturate the plant beds by pouring water carefully upon them. This will loosen the soil so that the plants may be drawn with the least possible injury to the roots. Pull the plants carefully, one at a time, laying them straight and in a position to protect the leaves from mud and dirt. In setting out tobacco a hole is made in the hill with the fingers or a short sharpened stick. Into this opening the roots of the plant are inserted and the earth is pressed firmly about them. In transplanting tobacco it is important to obtain an even stand. When the plants grow evenly they may be cultivated easily and effectively, and they may all be topped and harvested at the same time. To obtain this even stand or growth, the soil must be put in good

condition, the hills must be made of mellow earth and well firmed or patted with the hoe, the deadly cutworm must be hunted out and killed, and good plants must be set in place of those destroyed at the first opportunity.

CULTIVATION.

The best time to kill the weeds is just before they appear upon the surface. Stir the soil often and keep it loose and mellow. If the soil is heavy or has been beaten down with rain, the first cultivation should be deep. The roots of the tobacco plant grow rapidly, soon filling the earth completely between the rows. The tobacco field should, therefore, be well cultivated early in the season, and late cultivation, if necessary, should be shallow.

The hornworm generally puts in an early appearance, and it must be hunted diligently throughout the season and destroyed, or it will greatly injure or ruin the crop. The first week of its existence is occupied in eating several small holes in the leaf near the spot where the egg was deposited by the parent moth, generally upon a lower leaf. These small holes indicate its hiding place during the first week of its life and will aid in its discovery.

PRUNING AND TOPPING.

Pruning consists in stripping off the lower leaves, leaving the stalk bare six or eight inches above the surface of the hill. In topping, that is, removing the upper or flower stock, from eight to twelve leaves are left upon the plant, according to strength of soil, type of tobacco, etc. Good soil will mature a greater number of leaves than poor soil, and the bright varieties are topped higher than the dark or export varieties.

The leaves of the tobacco plant stand in eight perpendicular ranks. The ninth leaf stands over the first. This fact will assist the beginner in determining the number of leaves upon a plant without counting them. With practice the point at which a plant should be topped can be fixed at a glance.

Suckers should not be allowed to sap the plant. They should be broken off every week, care being taken not to injure the leaves.

CUTTING AND CURING.

About six weeks after the plant has been topped it will have fully attained its growth. The leaves will become thick and brittle, breaking easily, and they change in color from green to a pale yellowish green. These conditions indicate that the plant is ripe and ready for the harvest. With a thin butcher knife the stalk is split from the top to within a few inches of the bottom leaves; the stalk is then cut just below the lowest leaves. The plant is placed astride upon sticks, and these sticks are hung out of doors upon a scaffold, which consists of two poles standing on an incline as far apart as the sticks are long, so that the plants hanging from the sticks will not interfere; or else the plants are conveyed immediately to the curing barn.

SUN-CURED TOBACCO.

Sun-cured tobacco is hung first upon scaffolds for from five to ten days, according to the weather, and that is hung in the barn, where it is cured by air alone, no fire being used.

Properly constructed barns for curing tobacco by this process, or by what is known as the air-curing process, should be built practically air-tight, with adjustable ventilators. Rail pens or cheap and open sheds are, however, often used as a make-shift from lack of means or desire to erect better buildings.

CURING WITH OPEN FIRES.

The custom of curing tobacco with open fires is still practiced to some extent. The tobacco is placed upon scaffolds four or five days until it is well yellowed, when it is hung in the barn and fires are kindled under it. The fires are made to burn with the least possible blaze, slowly at first, but the heat is gradually increased, and maintained continuously until the leaf, except the upper half of the stem, is entirely cured. This process is fast losing its old-time popularity, and will doubtless soon be superseded by better methods.

CURING BRIGHT TOBACCO WITH FLUES.

This is a somewhat difficult process, requiring practice to insure the best results. The curing barn should be made nearly air-tight, and provided with ample ventilation readily controlled. We give the Ragland method:

First. Yellowing process, ninety degrees, from twenty-four to thirty hours.

Second. Fixing color, 100 degrees, four hours; 100 to 110 degrees, increasing two and one-half degrees every two hours; 110 to 120 degrees, four to eight hours.

Third. Curing the leaf, 120 to 125 degrees, six to eight hours.

Fourth. Curing stalk and stem, 125 to 170 degrees, increasing five degrees an hour, and continue at 170 degrees until stalk and stem are thoroughly killed and dry, which usually requires from twelve to fifteen hours.

After the tobacco has been cured it must be stripped and sorted, *during damp weather*, and, if not sold loose, it must be bulked or rehung and packed. It should be handled only when in good order. The leaves are generally sorted as they are stripped from the stalk into five or six grades—three or four of leaf and two of lugs. The different grades are tied in small bands or bundles, and the crop is sold loose or placed on the sticks and hung up as soon as stripped, to be taken down and packed in spring or summer.

EFFECTS OF CLIMATE.

Success in the production of tobacco involves not only a knowledge of the best methods to be employed in its culture and curing, but also a knowledge of what types can be most successfully raised in different localities and upon different soils. And when it is known what class of tobacco may be produced in any locality, it is also necessary to know what varieties must be cultivated to produce the most perfect type of that class.

Climate determines the class of tobacco which may be produced within certain areas. Thus, the fortieth parallel marks, quite abruptly, the boundary line between the cigar-leaf districts on the north, and the regions which produce the manufacturing and export types south of that line.

Between the fortieth and thirty-fifth parallels of latitude, lies the great tobacco belt of the United States, where tobacco has always been a leading crop, and where its cultivation is generally well understood. South of the thirty-fifth parallel, in the States of South Carolina, Georgia, Alabama and Mississippi, tobacco has been grown to some extent, mainly for home consumption, in nearly every county since the date of the earliest settlements. Its cultivation in these States has never been followed as a regular industry. What varieties and types will succeed here best is not, therefore, definitely known. These facts can be ascertained only by careful experiment. We know, however, that for several years past, South Carolina has produced an excellent type of bright tobacco, and that Florida has produced the highest grade of cigar leaf.

These facts indicate that bright tobacco may be successfully grown in the north-

ern portions of Georgia and Alabama, and that cigar tobacco, of the Cuban type, may be profitably cultivated in the extreme southern portions of those States; while if we judge of the types of tobacco which may be raised in Mississippi from those which are produced in contiguous States, both the bright and the dark heavy varieties may be grown there, varying according to soil.

ONIONS—HOW TO RAISE THEM.

BY JOHN KLEINFELDER, ROSS, O.

SOIL.

A good crop of onions can be grown on any soil which will produce a full crop of corn, unless it be a stiff clay, very light sand or gravel. To produce a full crop, the soil must be very rich. We prefer a piece of ground that has been cultivated with hoed crops, kept clean of weeds, and well manured for two years previous, because, if a sufficient quantity of manure to raise an ordinary soil to a proper degree of fertility is applied at once it is likely to make the onions soft.

MANURE.

There is no crop where the quality of the manure used is of greater importance than in the cultivation of onions. It should be of the best quality, and be well fermented and forked over at least twice during the previous summer to kill weed-seed. Unless treated in this manner manure will produce a great many weeds, requiring double the amount of labor to keep them down.

PREPARATION OF THE SOIL.

In the fall cultivate in from thirty to forty loads of well-rotted manure to the acre, and then plow about six inches deep. Avoid tramping on it during the winter, and as early as possible in the spring cultivate and harrow, making the surface as fine as possible. A drag can be used to good advantage, as it crushes clods and levels up the ground. If the ground is trashy it will pay, before planting, to hand-rake with a steel rake, as it is very essential that the ground should be free of trash, which will greatly facilitate the after cultivation.

PLANTING.

Onions can be set as soon as the ground can be got in order from the first of February to the middle of April. Onions set in February should be well set in the ground and covered over with earth to prevent the frost from raising them to the surface. Mark out your ground with a rake or marker made of a piece of timber 4x4, with five teeth made of wood, steel, or iron twelve inches apart, and made pointed, so as to make a narrow drill. Start your first rows straight and then use the last row for a mark, running the outside tooth in it and you will mark four rows at a time. Then set your sets four inches apart in the row. We use sixteen-foot fencing boards to set on, as it leaves the ground much smoother than to tramp it.

CULTIVATION.

As soon as the onions have started to grow and can be seen the full length of the row, give them a shallow hoeing between the rows. In a few days give them the second hoeing, this time close up to the plants, and a thorough weeding with a

hand-weeder. The weeder must get down on his knees astride the row stirring the earth around the plants in order to destroy any weeds that have just started and can not be seen. After this they will require two more hoeings ten days or two weeks apart. We work our onions with a double-wheel hoe similar to a double plow, which is a labor-saving machine, as one man will do the work of four men with common hoes.

VARIETIES.

The Yellow Strasburg, or Yellow Dutch, one of the oldest varieties, is raised principally from sets, does well in Southern Ohio, and is raised almost exclusively to all others. Yellow Danvers, another good variety, do equally well, but are principally grown farther north, and from seed. Large onions can not be grown from the seed here, as the seasons are too short, for as soon as hot weather sets in, about the first of July, our onions stop growing.

Five hundred bushels to the acre is a good crop, although 600 bushels is not an unusual crop.

LABOR, ETC.

It requires twelve bushels of sets to set one acre to onions. We sort our sets (which can be done with proper sieves), and set each size by themselves, making three sizes. We do this for the following reasons:

First. The large sets can be worked one week earlier than the smaller ones.

Second. They will grow more uniform, as a small set between two larger ones will always be behind and never make a large onion.

Third. By setting the small sets to themselves they will grow as large onions as large sets.

One man can set one acre in twelve days; hoe them four times in twelve days; weed them in four days; dig them in four days, and top them in five days.

As soon as the tops are cut, all the crop should be gathered by pulling and throwing them in winrows. If the weather is fine they will need no attention while curing, but if it is not they will need to be stirred. When the tops are perfectly dry you may cut them off or store them without topping.

ONION SEED CULTURE.

By JOHN KLEINFELDER, ROSS, O.

To grow first-class seed, the bulbs must be set out in the fall before cold weather sets in, so as to get them well rooted to give them an early start in the spring, in order to have the seed mature before hot weather sets in. When set out in the spring, the seed does not mature until hot weather sets in, and is apt to be light and of poor quality.

To grow good seed, select nothing but the finest bulbs. Special care should be taken as to color and shape; a flat onion of a bright yellow color being preferable. The cultivator can not expect remunerative crops unless he bestows careful attention on the selection of seed.

PREPARATION.

In the fall, about October 1st, select a rich piece of ground, start by plowing two furrows on one side of your land six or eight inches deep, then set a row of onions in the side of your last furrow, twelve inches apart and five inches deep. Plow three more

furrows, covering up the first, and then set another, and so on. About December 1st, cover them over with manure, which answers both as a fertilizer and protection to the onions during severe weather. In the spring, give them a hoeing, stir the earth well around the plants. The middles can be marked with a horse cultivator. As soon as the tops are eight or ten inches high, give them another working, after which they will need no further attention than to keep down the weeds. As soon as the seed ripens, cut off the seed heads, put them in sacks and hang up to dry, or spread them on a floor. The seed should be hulled during dry, cold weather in winter, and can best be done by placing the seed in a strong sack and pounding it with a flail or club, frequently turning the sack, then take out seed and rub well between the hands, after which, clean on a wind-mill or in the open air on a windy day. Before sowing the seed it should be subjected to a water test. This should be done on a bright, sunny day. Fill a bucket or a tub full of water and pour in your seed. All the good seed will sink to the bottom. All seeds that will float should be skimmed off and rejected. Pour off the water and spread the seed out on a board or canvas to dry.

PREPARATION FOR RAISING SETS.

The surface of the ground should be made as fine as possible, and if the seed is to be sown by hand, a board should be used to avoid tramping the ground. A piece of land having been well manured the previous year is best adapted for the raising of sets, providing it was kept clear of weed-seed, as it is very essential to have clean ground in order to raise sets. Sow the seed in the spring as soon as settled weather sets in; sow in drills about one inch wide and cover about one-half inch deep; sow the seed thick so the onions will not grow too large. The most accurate way of sowing the seed is to use a seed-drill. The drills can be made six, eight or ten inches apart, as desired. As soon as the onions are up so they can be seen the full length of the row, give them a hoeing, just skimming the ground. After this hoe them about once a week until about the first of June. As soon as the tops become dead, pull them and dry them a day or two in the sun, when they will be ready to store. Store them in a dry place not over six inches deep, and stir them once or twice a week for two or three weeks. During the winter they may be stored much thicker, and during severe cold weather should be covered. Freezing does not necessarily injure them, but they should not be disturbed when frozen.

LIVE STOCK, DAIRYING AND FEEDING.

BUTTER DAIRYING.

By MRS. N. H. TILLMAN, ARCANUM, O.

The dairy interest concerns all classes of society from the producer to the consumer, and has an indirect influence on all industries. It calls for the transfer of over 500 millions of dollars annually, which shows it is one of the most important industries of our land, and if there can be an influence brought to bear on the producing classes which shall result in supplying the market with a better article of butter and cheese, the financial condition of the producing classes will be bettered, and mankind helped in general.

I will confine myself more particularly to butter-making, and leave cheese-making to some one else more competent to handle the subject.

Butter-making is an art as old as history, and the manipulations of butter-making to-day by the majority of butter-makers, are not on as scientific principles as when it was done ages ago, when our foremothers churned in sewed up skins suspended by a limb near by. By moving it back and forth it was made butter by concussion, the most modern improved and approved plan of churning; so you see with all our improved methods and all our advancement, we are but very little in advance of our foremothers.

Butter-making is especially adapted to the farm, and I believe the major part of our gilt-edged butter will be made in home dairies on the farm, and I hope to be able to prove to you that strictly gilt-edged butter can only be made in home dairies; that butter which comes from our creameries takes a secondary place, and if farmers' wives will supply themselves with all the necessary modern improvements for butter-making, such as our husbands have to run the farm, they can make a better article of butter than is made in the creameries; but to do this and to get them all to see it, a great many prejudices will have to be overcome; but right here, in speaking of a better article of butter, the average farmer's wife confronts me with, "I can make as good butter as you or any body else"—and it is no use to argue the question with her—when in many cases she has not the first requisite for making a number one butter, adhering to the old plan of raising cream in crocks with wooden lids, churning it sour, in an old fashioned dash-churn, with the globules of butter all cut to pieces and so saturated with butter milk that it can never all be removed from the broken globules, and the consequence is it only keeps a few days before it begins to turn rancid.

If I can stimulate any of my sisters to the production of a better article of butter, I feel that I have not labored in vain.

The first requisite to begin with, is to procure a better breed of cows.

It is an established fact that different breeds of cows have different values for dairying, and the breed that I prefer, and that I believe is preferred by the majority of butter-makers, is the Jersey.

Butter-making Jerseys are known by their pedigrees—certain families producing

by actual test more than others; but whether you can get the pedigreed Jersey or not, get the best you can to begin with, for right here success or failure will follow.

This is the rock on which my bark split, for I thought when I had the short-horn general-purpose cow, I had as good a breed of butter-cows as any one, until I began to investigate it. I soon found my butter-cow must go for something better, and that I must supply myself with a breed that gave a higher per cent. of cream.

The cow whose milk is only eight or ten per cent. cream will have to give place and be substituted for the one that produces milk that will test from eighteen to twenty-five per cent. cream. In some instances as high as thirty-five per cent. has been obtained, but these are rare instances. There is also a great difference in the separation of the cream from the milk, as the cream from some families separates much easier than others. One cow may give as good milk as another, but the separation may not be so complete, that the one may be of less value than the other for butter purposes; and then there are different qualities of cream, so that the same bulk from one cow may not produce near as much butter as the same amount from another. Do not then be satisfied until you have the right cow to begin with.

Now, having the right cow, which I think is the Jersey, you are on the right road to success, and the next requisite is

HEALTHY, WELL FED COWS.

Cows fed on bright, well-cured clover hay, and a slop given them composed of corn-meal, ground oats and bran, with the addition of a little oil-meal, and occasionally a bundle of bright, well-cured corn fodder, will be a ration sufficient to produce a milk that, if rightly handled, will make a gilt-edged butter good enough for a king. Salt should be convenient so the cow can help herself at will. The next requisite is

CLEANLINESS IN THE STABLE.

As you all know, milk is very susceptible to odors, and the strictest care in regard to cleanliness in the stable and every other department is very necessary. The milking should be done quietly and quickly, and by a neat, tidy person, then removed at once to the creamer, for if allowed to become quiet the cream commences to rise and if then disturbed it hinders the process of separation. So you see the necessity of attending to business even in straining the milk.

In my Cooley creamer we leave it open long enough for all impurities and odors in the milk to escape before putting on the lids.

In about five minutes we put the lids on the cans and submerge it entirely under the cold water, then close down the lid of the creamer, when the temperature of the milk is rapidly reduced to forty-five or fifty degrees, as indicated by the thermometer in the front part of the creamer.

The milk is hermetically sealed, as the can lids project over and beyond the cans an inch on all sides, and down about one and one-half inches below the top of the cans, the pressure of the air in the top of the cans keeping the water out, and if there are any impurities or odors left in the milk it gathers in moisture on the underside of the lid, which has four grooves, and is a little conically shaped, which precipitates all impurities and moisture over and beyond the can, out in the water. The water should be changed morning and evening to keep it pure.

We do not use ice, consequently it takes the cream longer to rise. We skim every twenty-four hours; had we ice we could skim every twelve hours.

The milk is drawn off through a faucet at the bottom, and having a glass in the front near the bottom, as soon as the color line shows the cream at the bottom of the glass, another vessel is substituted, and thus we avoid having any milk whatever in the cream, and all possibility of having white streaks in the butter. Now we have

pure cream which, if properly handled, should make gilt-edged butter every time.

It is possible, and much easier, to make better butter on the farm where all the necessary conditions of good feed and cleanliness are under our control, than can possibly be made from any creamery, the milk of which is gathered from all points of the compass.

No farmer's wife can successfully compete with either the dairy or creamer, unless she has all the modern improvements.

Consult the markets and you will readily see the difference in prices on the different qualities of butter.

This should stimulate every farmer's wife to get the most modern appliances and do her best, for, unless she does this, she is not a success.

Just think of it! Forty-five millions of pounds of so-called butter made by the farmers' wives and daughters shipped to Europe in 1890 to be made into toilet soap.

No wonder "Oleo" has gained such a foothold, and that many people prefer it to much of the butter thrown on the market.

I omitted to mention that with the Cabinet creamer more cream is obtained, the work is greatly lessened, few cans take the place of many, so that a large milk-room is not needed, as the creamer can be placed in a small place, and the labor of skimming is almost nothing.

A creamer is just as essential to butter-making as the self-binder and drill is to economic wheat culture, or the potato-planter and digger is to economic potato raising, and I think there is a lack among the majority of farmers in not furnishing the necessary modern improvements and appliances for their wives in butter-making. For instance, think of a farmer who has all the necessary modern farm implements for the cultivation and harvesting of his crops, such as the drill, self binder, corn-planter, harrows, different kinds of plows, potatoe-planter and digger, etc., and his wife carrying crocks of milk up and down cellar steps, a dash-churn, such as our grandmothers had, and a paddle made out of a tobacco lath—and it looked as if she had made it herself, for it was whittled out only as a woman can whittle—using one of her crocks in place of a butter bowl, mixing back and forth as though mixing starch, as I saw not long since in my rounds, and her liege lord amply able, and, I think, perfectly willing to have furnished any thing that was needed.

If she had the ambition that every farmer's wife should have, you would not find her plodding along in the same old rut of her ancestors. And there are thousands of others plodding along the same old way. These are the class that make the butter that is sent abroad to be made into toilet soap.

At what stage should cream be churned, and shall it be sweet, ripe or sour?

The condition of cream, known as ripe, or very slightly acid, is the proper condition to churn.

There is more butter in cream that is just simply ripened, because when the cream is over-ripe, and is allowed to become sour, it is then in the rotting stage, and it is an impossibility to make butter with keeping qualities from this kind of cream.

Cream churned sweet does not give such good returns, but is said to keep indefinitely. I never tried it.

Milk should be skimmed sweet morning and evening, and at each addition to the cream pail it should be thoroughly stirred, so it will ripen up evenly, and the last addition to the cream pail should be at least eight or ten hours before churning, or there will be some butter left in the buttermilk, and it will not be uniform in color.

The thermometer is very essential to every well-regulated creamer to obtain the proper temperature for churning, which should be about sixty-four degrees in winter and sixty or sixty-two degrees in summer, according to the ripeness of the cream.

To ripen the cream for churning (as it has all been skimmed sweet, and after the last cream has been added and thoroughly stirred), set the cream pail in a deep dish-pan of hot water, and stir constantly until it reaches the temperature of seventy-two degrees, keep in a warm room, then in about eight or ten hours it is ready for churning. It is not sour, but simply ripened, being slightly acid.

NOW IT IS READY FOR THE CHURN.

As soon as the cows are off pasture in the fall, and as late as May, I use Thatcher's orange butter color. It gives the butter a June tint, and adds much to its appearance.

To a great degree the "eye rules the taste." I put this coloring in the cream after it is in the churn.

The churning should cease as soon as the butter is in the granular state. This does not mean the first appearance of the granular state, but it means little granules of butter about the size of bird shot. Now, stop the motion of the churn, withdraw the plug, and draw off the buttermilk, then rinse the butter by adding a handful of salt to a bucket of water, to more thoroughly separate the butter granules from the buttermilk, pouring in cold water and giving a shake or two, draw off the water, and continue this process of rinsing until the water comes off perfectly clear.

It is now ready for the salting process. Now, make a strong brine, skim and strain. Pour this over the butter, give it a few shakes to thoroughly mix, then let it remain about twenty minutes, then take out on the worker, roll out into sheets, then sprinkle with salt. Use nothing but the best brand of dairy salt, using one-fourth ounce to the pound in addition to brine salting, fold up and roll out three or four times, when it is ready to print or to make into rolls.

It will keep indefinitely, and you will have a quality of gilt-edged butter that is impossible to excel, that will not get oily, will have a pure, sweet, nutty taste, the aroma being rosy, the texture or grain in breaking resembling a break in cast iron, or like a break in beeswax.

The requisites for making a gilt-edged butter are—

First. The best butter cow, healthy, and well kept.

Second. Absolute cleanliness in all departments.

Third. A cabinet creamer.

Fourth. Churning by concussion.

Fifth. Best brand of dairy salt and butter color.

He who would the front attain
In butter making lore,
Must stir himself; not plod along
In paths long trod before.

The scrub must go—Good by old cow
Dash-churn and crocks and pail,
And I will substitute for you
The Jersey cow, swing churn and can.

The Cooley creamer I would get,
Eureka butter worker, too,
So 't butter you would make gilt-edged.
You must this plan pursue.

If I have helped just one of you
The better to attain
A higher aim, to do your best
My work is not in vain.

So, now, as farmer's wives we'll go
To do our very best,
And when we meet right here next year,
We'll hear from some of the rest.

AT WHAT AGE SHOULD HOGS INTENDED FOR BREEDERS BE BROUGHT TO MATURITY.

BY L. C. PETERSON, SPRING VALLEY, O.

MR. PRESIDENT AND GENTLEMEN: We do not remember to have heard this question asked before, coming to so close a point and requiring a clear cut and definite answer. The inference, under the circumstances, is that the committee selecting the subject thought it one on which information was needed.

To thoroughly inform ourselves that we might write intelligently on the subject, we have scanned all hog lore within our reach, and have been unable to find any thing bearing distinctly on the question; consequently we find it impossible to crib any other man's thoughts or ideas. For a generation the cry of early maturity of swine has been heard. Previous to that the object was to make a hog as extensive a crib as possible, walking the corn to market in the shape of pork. The heavier the bone and the larger the frame the better the farmer was pleased, as the distance to market made it necessary that the frame be large and strong.

Now all this is changed, for practically the market is at our doors. Railroad transportation does away with the necessity of long and laborious driving. Cheaper pork must be made and made quickly. The corn must be stored away in more numerous and smaller cribs.

The down east Yankee, the Kentucky and old dominion gentlemen all had a tooth for roast pig, but the man that bought more land to grow more corn to feed more hogs never sacrificed his pocket-book to cater to his tastes. A roast was too expensive a luxury to him when the prospective hog was considered. The tastes of the aforesaid gentlemen have, to a modified extent, become the tastes of the whole people. If they could have roast pig they must have pig pork. The pieces of side meat a yard square and proportionately thick, along with the slice of ham the size of a saddle-skirt have lost favor in the eyes and tastes of the pork eaters.

The lives, surroundings and manual labor of these people do not require the strong oily meats of past times when the clearing of the country and the building of the towns and cities were done almost entirely by man's physical labor. After the farm was cleared and mechanical forces came into use, and the farmer turned his attention to the less laborious and more profitable employment of stock-growing it soon dawned upon his vision that the cheapest made pork was not secured in the largest animal, nor the most palatable in the large coarse one. The advanced breeders and farmers have been quick to grasp this.

For the long period mentioned, we have heard the cry of early maturity. What is meant by maturity? It is the time in one sense when the animal reaches a period when it will reproduce itself. In another sense when it has reached full growth of bone and muscle; still another when it is ripened for market. By these definitions at least two conditions may and do apply to the development of swine.

The question that we have started out to answer implies hastening maturity, or it would not have been asked. All the talk of early maturity and all the efforts in that direction have been to hasten the pig from his birth to his exit into the pork barrel. To secure this the parent stock must, of necessity, be animals of quick development. But the question of how soon this parent stock should be fully developed has not been considered with as much care as the matter of making quick pork out of the offspring. You will note that there is a difference, and a wide one, between a matured fat animal and a matured breeding animal. The maturity of the former is wholly a matter of taste with the consumer and is variable; one class calling for one kind and another some other kind; consequently a fat animal reaches maturity at different ages and weights. The maturity of a breeding animal can only

be reached at one time; namely, when the animal has fully developed its bone and muscle regardless of the meat carried.

We have made three distinctions between the matured fat animal and the matured breeder, because we believe they should be made, and because they are not recognized by breeders and growers as they should be. As we have said, we have been unable to find any expression of breeders and writers bearing directly on the subject before us; hence we must be independent in our considerations, yet we can not claim originality for all our deductions.

Breeders boast of the wonderful weight that their fat animals attain at six to seven months old, and at full age, six or seven years; but none are so careful to tell us what they want their breeding stock to weigh in breeding condition at one and two years old, although they tell us what their show animals weigh as yearlings and two-year olds, which means any thing between one and two years. In short, an animal is a yearling until two years old, and two until three years.

It may not be out of place here to note a few physiological facts that have bearing on the question before us. The sooner an animal reaches maturity the sooner it propagates, and the shorter the duration of life. The reproduction act may be regarded as the culminating act of all animal life requiring the greatest degree of vitality and the largest expenditure of energy. In determining the time that breeding animals should be brought to maturity these facts must be considered. If a sow or male are bred young of course their vitality is drawn upon. The younger they are the greater the draft on vitality, consequently they can be matured quicker if not used for breeding when growing. They are often so precocious that they will breed at four months old or younger, but no intelligent breeder or farmer will think them sufficiently developed to produce offspring of any great value bred at that age. A sow bred at this age will be checked or stunted in her growth to such an extent that she would probably never properly develop, regardless of the best care and keeping afterwards. It is probable that a large proportion of the pure bred swine now in the country, if properly fed and cared for, would reach full development of bone and muscle at one year or eighteen months old, provided they are not allowed to breed. When allowed to reach maturity before being bred, there is danger that they will not be safe or valuable breeders. However, there is a question about this. If the animals have been properly fed while growing, under the usual treatment given swine, it appears best to breed them while growing. The organs of generation and the mamillary glands appear to develop better by this system. If it requires the best care to mature an animal at one year or eighteen months old without breeding, it is not possible to develop or mature them at that age while in use.

It is the general rule to breed young sows at eight months old, and the use of boars commences about the same age. A light use of the boar at this age will not retard his growth to any perceptible degree, so that generally speaking, the male, in the hands of the general farmer and small breeder, if properly treated, should come to maturity sooner than sows. It is a difficult matter to estimate to what extent the growth of a sow is retarded if put to breeding at eight months and kept regularly at work. The greatest draft on vitality usually comes from the first and second litters.

With even the best treatment, a sow that is put to breeding at eight months old and kept regularly at it at the rate of two litters a year can not possibly reach full development of bone and muscle under two and a quarter years old. In most hands she will require more time, probably one-half a year longer.

A sow not bred until one year old can nearly reach maturity in development of bone and muscle before she farrows her first litter, making it possible to reach maturity at two years. The male can be made to reach maturity, in the sense understood, at the age of one year or a little over, and not to exceed eighteen months. We believe it is necessary that they should reach maturity this soon. The quality of meat demanded by the markets requires it. That the boar gives form to the off-

spring is an acknowledged fact, hence the great point in reaching meat maturity at nine months is to have a quick maturing male. This brings out another point looking to the quicker bone and muscular development of the boar than can be expected of the sow. The shrewd breeder is clear of producing offspring coarser than the parent animals. He looks with more desire to the improvement in the symmetry of the produce, and to accomplish this the male must embrace in his form the breeder's ideas. Coarseness may be allowed to some extent in the form of the sow, but not in that of the boar, hence, the boar being neater and more symmetrical, will attain growth quicker.

Our deductions so far have been on the basis that animals were used for breeders while growing; both male and female are retarded in proportion to amount of work done. The former not so much as the latter, unless he has been shamefully abused.

Now what could we expect of these animals if not bred while growing but allowed to exert all the forces of nature in the sense we mentioned for development?

Boars such as should be used, can be made to reach maturity at ten to fifteen months old, sows at twelve to eighteen months. The experience of the breeder will guide him in his judgment of the time it will require for a selection to reach maturity. His selections should be made while the pigs are at the teat. Some may say that it is not possible to mature hardy and strong animals at the age mentioned. In reply I would say that we have only advanced what we believe attainable. If an animal will make the growth, it need not be soft, but should come to its maturity, by a proper system of feeding, with perfect bone and muscle.

Again, it is thought that a strong bone or muscle must have age. This is twin brother to the opinion that a pig must live on half rations for months to make him strong enough for a full one.

It is a foregone conclusion that we must cater to the demands of our customers, which is for young and quickly matured meats. To secure such meat-producing animals that will ripen at any age, we must have breeding stock that will reach maturity as early as possible, consistent with well known physiological laws. We believe they can be had at the ages mentioned, but we are in serious doubt, if they should come to maturity at any earlier ages.

In this, the presentation of our ideas, we hope that we are in the range of possibility and practicability, and that our thoughts may be of some value.

THE JERSEY COW.

READ BY RICHARD E. ROBERTS, MT. PLEASANT, O.

It is narrated in *Aesop's* fables that once the fox and cat were in earnest conversation beneath the branches of a spreading oak. The fox boasted loudly of a thousand tricks by which he could elude his pursuers. The poor cat could boast but a single trick.

While Reynard was still condoling pussy on the unequal manner in which nature had distributed her gifts, the hoarse baying of the hounds was heard in the distance. The fox was off in a moment to display his cunning. The cat, by the use of her only trick, ascended to the branches of the friendly oak, where she in safety viewed her boastful friend overtaken, and in spite of his thousand tricks, unable to elude the hounds.

For our favorite, the timid ornament of the English lawn of yesterday, and the patient business cow of the American farmer to-day, we claim but one trick, and we,

like the cat of the fable, may seem modest, but after the race give us credit for what we merit.

We believe the Jersey cow in her line of work is better adapted to the needs of the mortgaged farm of Ohio than any other breed here represented. That she is capable of producing more dollars' worth of butter from the same amount of feed than any other breed. She is better adapted to the mortgaged farm than any of the beef breeds, because beef-producers of Ohio can not compete with the products of the cheap corn and the pasture of the far West, and with the additional dairy-work she can make the profit of one year's product equal to the price of a three-year-old bullock.

She will bring more dollars' worth of butter from the same amount of feed; first, because she will produce more butter, and second, because her butter is in greater demand, especially during July and August, when other butter has either to be corked up in a jug or supported by diminutive icebergs. These conclusions have been drawn partly from my own experience and partly from the testimony of others.

I am a small breeder of Jersey cattle, generally carrying from fifteen to twenty head, and my experience dates back about twelve years. My first awakening to the especial merits of this great butter breed was a number of years since. We had two family cows and a heifer just fresh for the first time. This was the 6th of December. One of the cows was just dry and would be fresh one month hence, January 6. The other cow was due to be fresh in five months. We were making so much more butter than our family used, that we began sending the surplus to a grocer in Wheeling at this date, December 6, and continued to do so from the two cows for the first month, and from the three afterwards until the 6th of April. Their daily feed, in addition to hay, was eight pounds of bran and corn-meal mixed. We found from the grocer's book that we had sold 805 pounds of butter, which, with the addition of thirty-five pounds of butter used at home, made a total of 840 pounds of butter, besides the milk and cream used in the family. The price ran up to thirty-five cents a pound, and the quality was such that the grocer offered us thirty cents through the next year, and said he could dispose of 100 pounds per week of that quality.

Last year, if all our cream had been made into butter, counting two heifers as one mature cow, my herd would have averaged 860 pounds, or \$117 to the cow. This was on light dairy feed, viz.:

Fifty pounds of corn ensilage per day for 150 days, or four tons, at \$2 per cow	\$8 00
Eight pounds of hay, or two-thirds tons per cow.....	4 00
Four pounds of oil-meal and three pounds of bran mixed, for 150 days, and half that for 150 days (fall and spring).....	18 00
Pasture for seven months, at \$1.50 (fall and spring).....	10 50
Ice to raise cream, etc.....	4 00
Cow debtor to feed and ice.....	\$44 50
Credit 860 pounds butter at 32½ cents.....	\$117 00
Balance in favor of cow	72 50

We have the fertilizer and skim-milk as pay for the labor of milking, care of stock, etc.

We give this, not because it is extraordinary, but because it is our own experience and produced on very light feed. Others have done much better.

The herd of J. W. Shuster, of Gansevoort, New York, averaged 880 pounds of butter per cow last year, ending March 15, 1891.

The Lakeside herd of Hastings, Michigan, the first year after importation, produced an average of 464½ pounds of butter to the cow.

There have been nearly 2,000 Jersey cows that have made records of from fourteen to forty-six pounds of gilt-edged butter in seven days. There is no accident about this. No strain is especially distinguished above all the rest. The honors are divided among many families. There are the Coomassies, and the St. Lamberts, the Rioters, Rieter-Alpheas, Stoke-Pogis-Victor Hugos, the Signals, St. Heliars and Victors, and a host of other families largely represented in this great roll of honor.

Of the Coomassie family we have Oxford Kate, with a record of thirty-nine pounds and twelve ounces in seven days; an amount of butter equaled by no cow outside of the Jersey breed. Also, of the same family, we have the phenomenal cow Princess 2d, with a record of forty-six pounds and 12½ ounces in seven days, surpassing the best record of any other breed by more than seven pounds.

The famous heifer Ethel 2d (only remotely connected with any of the above families), in her two-year old form, has an unequalled record of thirty pounds and fifteen ounces in seven days. Of the Stoke-Pogis-Victor Hugos we have Mary Ann, of St. Lambert, thirty-six pounds. Ida, of St. Lambert, thirty pounds, and twenty-five other sisters with an average weekly butter record of over twenty pounds apiece. Such a family of butter-cows was never found in any other breed.

We do not refer to these as economical producers, but only to show the tremendous digestive powers of a well developed Jersey cow.

Our friends of the Blacks and Whites have boasted loudly that their favorites have carried off many of the prizes at the public butter tests. This is true, simply because our breeders do not care to expose their great cows on the crowded fair grounds when there is nothing for them to gain. Nothing to gain, for the simple reason that we have always held, and still hold, the championship in the great public butter tests of the world.

Oakland's Cora 2d (22362), a grand inbred Albert 44 Welcome cow, tested at the Provincial Exhibition, Ontario, in the fall of 1886, at the public butter test, three pounds, 11½ ounces in one day. No cow outside of the Jersey family, at a public test, has ever borne a comparison to this.

Baron's Progress, the champion Jersey cow of England, made, in a public test at the British Dairymen's Association, held at London in November, 1889, three pounds and five ounces of butter. This, too, is above any public test ever made by our German neighbors. So you see, we are merely "resting on our laurels," waiting for something "to turn up" on the fair-grounds worthy of our attention.

While this friendly rivalry may do its part toward stimulating dairymen to breed better stock, yet in deciding the relative merits of good butter-cows, it is very unreliable, for many of our best cows at home we find nearly a failure when surrounded by the throng and excitement of the fair-grounds.

The true merits of the great butter-cow are found where large production is coupled with economy in consumption and minimum expense.

I have already endeavored to show the great capabilities of the little Jersey, so far as large production bears its part, and now it is my purpose to consider some of the advantages the breed holds in the line of economy and minimum expense.

The ordinary size of a Jersey cow is from 800 to 900 pounds. Her small size and contented disposition call for less expense in fencing, less stable-room, less mow-room, smaller ice houses and smaller creameries. Smaller creameries, because the butter fat is floated in but half the amount of water, and less ice because the butter will stand alone in hot weather.

The small expense of producing a Jersey cow should be considered. Hay, pasture and meal enough to produce the 600 pound two-year-old heifer, after which she pays her own way and returns a dividend to her owner. But bear in mind we have only invested in her feed enough to produce 300 pounds of dressed beef. This is the cash price of a butter-machine that will out last your mower, or binder or

threshers, and when it is worn out it will have daughters and grand-daughters enough to supply all our neighbors with butter-machines, still of the most approved type.

I invested in two of those machines nine years ago that are still doing good service in my herd, and have ten daughters and ten grand-daughters, making in all a herd of twenty-two.

The great endurance of the Jersey cow is truly wonderful and enters largely into the economy of using this breed. Chansoetea is sixteen years old and has had fourteen calves. Lou Lou, 3156, is twenty years old and has had seventeen calves. Mrs. Kate M. Buswick's old cow, Christie, she informs us, is sixteen years old and is still capable of making sixteen pounds of butter a week. Duchess of Argyle is nineteen years old and is still mistress of the herd. Caroline 2d, 2019, is twenty-one years old and has had nineteen calves. The noted cow, Lanciers Fancy, made her great record of 936 pounds when she was twelve years old, and died at the advanced age of seventeen years after that many years of almost constant work. Celest of St. Mary's, 8696, is just fresh at the advanced age of twenty years. Daisy, the famous Paron Stephens cow, died at the age of twenty-nine years. The old cow, Masenna, with the reputed record of nearly 900 pounds of butter in a year, has just completed a test of 416 pounds of butter in six months at the mature age of sixteen years.

What a great misfortune it would have been had these cows been twice as large. The original investment of food to produce them would have been twice what it is. Then, when we consider the corn and oats and hay necessary to sustain and keep the double sized body warm for all these years, would it not incur a wanton waste to be carefully avoided by every dairyman?

Yes, gentlemen, you who invest in Jersey cows will never have an elephant on your hands. Waste, by using those large cows, is now being forcibly demonstrated by the various experiment stations. Last year, at London, Ontario, a careful test was conducted, including the value of feed consumed, and it was found that Jerseys showed thirty-three per cent. more profit on the amount of food consumed than any other breed. At the Maine station a two-year careful test has just been closed in which two cows, each of Holsteins, Ayrshires and Jerseys were under careful test. Every pound of food was carefully weighed, and it was found at the close of this exhaustive experiment that each pound of butter produced by the Holsteins cost twenty-seven cents; each pound produced by the Ayrshires cost twenty-six and one-half cents; each pound produced by the Jersey cost but nineteen and one-half cents. In my own experiments, as already shown in this paper, the cost of a pound of butter in feed and ice was twelve and one-third cents.

So in selecting economical butter-cows we must keep a close eye to the relative size of the animal with the butter she produces in the year.

Now let us examine the powers of the great yearly butter-producers of the past. The most famous of these are Jersey Beil, of Scituate, Eurotas Jersey Queen of Barnet, Mary Ann of St. Lambert, Lanciers Fancy, Euratisama, Bisson's Bell, and Pauline Paul. The last is the only Holstein with a year's record, and I would call your attention to the fact that she is one of the smaller cows of the breed. Her bodily weight is 1,450 pounds, and her year's butter record is 1,154 pounds, and while this leads the records of the Jerseys, her large size compared with her Jersey competitors places her, as an economic butter cow, fifth in the race. When we place her on one end of the scale and her year's butter product on the other we find it will take 300 pounds more butter to tip the beam; or in other words, for every 100 pounds of bodily weight she makes eighty pounds of butter in the year.

Of the Jerseys, Mary Ann of St. Lambert weighed 1,050 pounds and produced 867 pounds of butter, 197 pounds less than her own weight, or eighty-two per cent. Bisson's Bell weighs about 1,100 pounds and produced 1,028 pounds of butter in a year, lacking but seventy pounds of producing her own weight in butter, or 94 per cent.

The old Jersey cow, Lanciers Fancy, at the age of twelve years, produced 936 pounds of butter, an amount equal to her own bodily weight, all in twelve months. Was this achievement not enough to satisfy the most exacting breeder? But there was still more in store for us.

The little Jersey pet, Eurotisama, the smallest cow ever tested for a year, with a weight of but 820 pounds, produced 945 pounds of butter, 125 pounds more than the weight of her own body, or 112 pounds of butter to every 100 pounds of cow. Twelve per cent. in advance of her closest Jersey competitor, and distancing her Holstein cousin by thirty-two per cent., she stands to-day the queen of the dairy world.

While we do not deny but what there is occasionally a fine butter cow in other breeds, and may carry off a prize now and then, as they did at the great New York dairy show, yet while the other breeds carried off but a single first prize, the Jerseys carried off five first prizes out of the six. In this contest of breeds there were 161 entries of choice butter coming from many different states.

That the product of the Channels Islands cattle is in greater demand than that of any other breed we will not attempt further to prove, as it is self-evident and fully sustained at the bar of public opinion.

You will notice the milkman sells nothing but pure Jersey milk. The middleman's butter is always fresh from some Jersey creamery, and the rest of the dairy world paint their product to imitate the genuine Jersey goods. Even the manufacturer of patent milk-cans attempts to curry public favor by offering his goods as the Jersey milk-can, and a man out in Iowa advertises the Jersey butter-tub, and so it goes, all attempting to yoke their wares in some way with that already fully in favor with a critical public.

DEHORNING CATTLE.

READ BY H. SAMPSON, VAN WEET, O.

MR. PRESIDENT, LADIES AND GENTLEMEN: The subject you have assigned me, "Dehorning Cattle," is a new one, in practice, if not in theory, in this county. It is a question that we as farmers must look at from the standpoint of profit or loss. Whether we dehorn our animals or leave them as nature has provided, we have all come short of the truth with respect to horns. We have been wont to suppose that what is, is right in this regard as in other matters. We see cattle with excrescent appendages, and we jump at once to the conclusion that being thus, they are thus for a purpose, a wise purpose; that in the natural economy of brute dispensation, horns are a necessity, and when their injuries and their damages force our unwilling minds to a different conclusion, we shut off all discussion by this grand clincher. Horns are a necessary evil. We have determined long since that in a domesticated state cattle do not need horns. There are now no wolves or other savage beasts, whose ravenous appetites are likely to decimate our herds, nor are our fenced farms, nor our inclosed sheds or barns, or our narrow yards at all calculated to inspire a love for the close proximity to these useless protuberances, and we come to denounce them as a nuisance, a dangerous weapon in the control of unthinking brute force, dangerous to man and beast alike, destroying life to hundreds of the human family, and to thousands of their own kind, to say nothing of innumerable horses, hogs and sheep. The more the losses we sustain among our domesticated animals are investigated, the proportionate share is chargeable upon horns. It is the well-drawn conclusion of able statisticians that in these United States alone not less than two hundred persons annually meet death by these cruel appendages.

Now I wish to quote from Mr. H. H. Haff, of Illinois, the originator of dehorning cattle in the west. He says the horn is composed of three parts: First, the bony horny within; second, the periosteum around it; third, the shell over all. On the calf the embryo horn is a mere button of cartilage. It is without direct blood circulation, and is comparatively without feeling, and is all cartilage. At, say four months of age, this cartilage begins to connect with the skull bone, and as the frontal bone forms, this assumes shape as a protuberance or excrescence, and becomes vascular, that is, forms and grows harder, while a corresponding growth of skin (without hair) becomes its cover or shell. At its base, and just under the first hair, is a small ring of flesh, called the matrix or mother of the future horn.

Now, until the animal attains the age of three years, the growth seems to be general through all the parts alike. But at three, the growth partially ceases and seems thereafter to be confined to the base that is at the matrix, and hence each year a ring is thrown off or formed, which makes from thence the annual growth. Now, if asserted there is little life and no feeling in either the shell or the bony horn, it follows as a matter of course that there is but a small part to be affected in dehorning, because all the pain produced is caused by cutting off this periosteum. This would amount to no more than a cut of the same length upon the body, in fact not so much, because there is less nerves here than at the surface of the skin. It is usual to compare dehorning to branding and other necessary operations. In branding you inflict great pain, because the skin is made up of nerves, so to speak, while in dehorning none of these conditions exist. Were the horns the seat of a great nerve center, they would cease to be adapted either to attack or defense.

Now, to sum up the advantages to be achieved, I may say: First, dehorning cattle would insure a lease of life to at least two hundred people annually in the United States; second, dehorning cattle saves us ten thousand colts and innumerable cattle, hogs and sheep.

Dehorning cattle saves at least one-half of shed-room, and better still is the fact that the shed may be made tight all around, save a few openings on the south side.

Again, cattle feed better, are more quiet, fatten better and ship better, as any one can see, as dehorned cattle are shipped through this town nearly every day from the west. It seems that taking the horns off a full-grown animal takes the boss feeling away from him, and he is willing to divide his room with his master. Now, how is the operation of dehorning performed? Mr. Haff says, put the animal into the stanchion, use a rope with an iron ring in one end; make a double loop, throw the ring end over the neck, the other around the nose; raise the head and draw the rope over the top of stanchion; draw the head up tight and secure and cut off one horn, turn the head secure as before and cut off the other horn. Turn loose at once, putting nothing on. What, nothing? No, nothing. All applications are useless. They are irritants. Keep your salve for your feelings; the horns do not need it. Use a small, short, sharp, neat saw. Dehorn at any time of year except fly-time.

Now, I have given above Mr. Haff's method of taking off horns, but if any of you brother farmers have objections to taking them off in that way, I will now give you a receipt for taking off the horns when they are calves, which will neither hurt your conscience nor cost you more than two cents to the calf. Put on one application of crude potash while the calf is young, and I can assure you the problem of whether you will dehorn your cattle from this time on will be solved.

Now, what are the objections? Positively none, that I know of to the animal. Will cattle grow as large if they are dehorned? Cattle will not look as large, but at the scales they will more than hold their own, because they become so quiet,

and hence better. Will they sell as well? That depends. If one wants beef, I see no reason why their sale should be affected in the least. If, however, one is buying or raising cattle for shows, where the fashion is to grow waxed horns, I can understand that fancy may dictate and fashion may decree that horns must remain. With such fashions and fancies dehorning does not associate. Dehorning comes to the average farmer, he says, in the exercise of a sound discretion. You must judge and decide for your self. If, in your opinion, the end shall justify the means, then adopt the practice.

Of course there are some persons who will object even if there are no valid objections. There is the man who has no business of his own, and so he, of course, has to attend to his neighbor's. He has no cattle, never did, and never will have cattle, or any thing else, for that matter. But he will object, and will enlarge on the horrors of this practice. He will grow eloquent as he expatiates on the groans and moans and sighs of the suffering animal. Remind him that the pain is momentary, not more than five seconds; that the blood scarcely appears, not more than a table-spoonful to the horn; remind him of the miseries of those which stand outside while the bosses occupy all the feeding room; of those which freeze, while the bosses monopolize the shed; or of those which are punched out into the cold to suffer from horn thrushes, and tell him that this is the daily experience of every man who keeps cattle, and he will look at you as wise as an owl, and likely denounce you to your teeth. This class will object, but they are like the Mikado's list that were to be executed.

"You can put their names on the list,
Put them down on the list,
For they never will be missed,
For they never will be missed."

CATTLE AND SHEEP VS. CORN AND WHEAT ON HILL LAND (FOR PROFIT).

BY DECATUR BAKER, OTSEGO, O.

MR. PRESIDENT, LADIES AND GENTLEMEN: On the subject above designated, I don't expect to tell the intelligent farmers in this assembly any thing they don't know, but I confidently expect to remind some of them of what they don't do.

It is an old saying that if we stop to count the cost we will never start the plow, which seems to infer that we must raise grain for our families and live stock whether it pays or not.

I, for one, will never start the plow until I have counted the cost, and if I find something more profitable I will never start the plow.

How to get the best income from our hill land, and retain its fertility, has been a matter of the first import to the thoughtful farmer.

We are in danger by continued cultivation of hills to so destroy the fertility as to have to finally abandon them, as are thousands of farms in the East. Massachusetts alone has nearly nine hundred farms now abandoned that once responded liberally to the farmer's toil.

We think if there is one thing more than another that we owe to posterity, it is to leave the land as good as we found it.

Our hill land is washing off, especially while under the plow; it is imperceptibly going, and the soil is getting thinner, and in places there are great gullies; the result of a single crop in an unfortunate season, spoiling the land beyond redemption. I know of some fields so ruined that, if the whole farm was in like condition, it would very soon be one of the abandoned farms of Ohio.

But let us see how we can raise wheat on the hills and keep up the fertility of the soil. The same rule that applies to our level plains, naturally rich, and that do not wash, won't apply to our hills. But suppose we can raise a crop of wheat, and then clover, and let the clover grow (not feed it off), but plow it down—some claim that will keep it up. Then what is it worth to raise an acre of wheat and deliver it at market? This is variously estimated at from six to ten dollars—my own estimation is eight dollars on hill land. The next thing is, how much wheat do we raise per acre? I notice that by assessors' returns that twenty of the southern hilly counties have averaged, for the last twenty years, $9\frac{1}{4}$ bushels per acre, which, at ninety-two cents, makes eight dollars and sixty-five cents (\$8.65), leaving a balance of sixty-five cents to pay rent on land for two years. Well, the straw is worth something, probably enough to pay for seeding to clover again.

Well, how about corn? It is certainly worth nine dollars, or a dollar more than to raise and market an acre of wheat, but to keep up the land is still more difficult, for corn is the worst crop we have to destroy the fertility of the soil, and seems to necessitate another grain crop to get it to clover again; but I have sometimes sowed clover with corn after last plowing in July with good results, save that the ground was left too rough; but I suppose, a crop of clover will restore the land as good as it was, provided the clover is plowed in.

Then the question of how much corn per acre, I find difficult to answer, but from the best information that I can get it don't exceed twenty-four bushels on the hills, on an average; which at forty cents equals nine dollars and sixty cents less the nine dollars for raising and marketing crop, which leaves sixty cents per acre for use of land for two years. Is it any wonder our farmers cry hard times?

The corn fodder is good feed, but very unhandy, and above the cutting worth about enough to pay for and sow the clover seed.

It has been my fortune or misfortune to buy several of those badly worn little hill farms. If they are not in grass, and they generally are not, I plow and sow to wheat and blue grass, with timothy, and follow with clover in the spring, using fertilizer with wheat if land is very thin. After harvesting the wheat don't pasture much the first year, let the grass get a good start, *and never plow it again.*

I then keep cattle on it. I calculate four acres to summer and winter a bullock from two to three years old without grazing closely, and expect a gain of twenty to twenty-five dollars in a year without grain; we will say twenty dollars. That, for two years, would be forty dollars, less eight dollars for care and putting up feed, and we have left, thirty-two dollars for the use of four acres for two years or eight dollars for one acre for two years, instead of sixty-five cents gain on an acre of wheat same time.

For sheep, I can say as much as for cattle; where I keep one 900-lb. bullock I can keep ten ninety-pound young sheep, and if good they will shear seventy pounds, and, at twenty-nine cents, equals \$20.30, and if some mill feed is added to their ration they will pay well for it by increased weight of carcass. I am aware that some will say, if we all raise sheep we will overstock the market.

Remember, that in the first nine months of 1891 we imported over 104,000,000 pounds of wool, and manufactured woollen goods and yarn to nearly double the value of the wool imported.

I have tried to treat this subject fairly and to avoid extremes. I claim that I can not only summer and winter a bullock on four acres, but on less than three where it has lain in grass for a number of years. My best pastures have not been plowed for more than twenty years.

ENSILAGE.

PAPER BY E. M. STRONG, DELTA, O.

Perhaps I can do no better than to give you some of the reasons that induced me to make a trial of ensilage. On closing out the tile factory, I found myself possessed of 120 acres of land in the edge of the openings, with perhaps eighty acres under cultivation—though many stumps and grubs were left—enough tile to drain the whole, and to make it seem interesting, there was a debt of over \$3,600, the profits of a tile factory. The soil is about half a black sandy loam, and the rest a loamy clay, originally wet prairie. But little was drained on account of insufficient outlet. Something must be done to pay better than ordinary farming, or the whole would have to go under the hammer. The land being light needed fertilizer, and would be but little damaged by pasturing cattle.

If I feed cattle for beef, I must compete with the western ranger through the Chicago dressed beef. If I kept cows for butter, the distance from a good market and the competition of oleomargarine, made the outlook in that direction unfavorable. Sheep husbandry seemed to me to be at the mercy of a changeable congress. A cheese factory two miles away seemed safe. Manufacturing a staple article, always in use, never out of fashion, and up to the present—as far as I know—is not obliged to compete with any fraudulent imitation.

The number of cows I could keep under the old way of farming would not make manure enough to fertilize the light soils, nor the income but little more than pay the interest. Men who had used ensilage claimed they could double the number of stock, over the old way. That was what I was looking for. Here are their figures, and, by the way, there is nothing exaggerated. An acre of land that will produce 100 bushels of ears of corn, will produce eighteen tons of ensilage. Husk the corn and you will have 200 bundles of fodder, which would make the rough feed for one cow 100 days. Now the eighteen tons of ensilage, by feeding fifty pounds per day, forty days to the ton or, 720 days, will furnish one cow as the principal feed. One acre of grass will average about two tons of hay. This will keep a cow from 160 to 200 days, by feeding from twenty to twenty-five pounds a day. Compare the figures:

One acre of dry corn fodder one cow	100 days.
" hay "	200 days.
" ensilage "	720 days.

And on rich land that has been nearly *doubled*. With me it was the "*ground hog*" argument, "I *had* to have it." Right here I will venture to say, that although debt is something one should not carelessly assume, yet it is often the incentive to economy, and more careful systematic work, and sometimes will bring out capacities that might otherwise remain hidden. The old saying that "necessity is the mother of invention" might be applied to debt.

In building the silo I had to re-arrange my barn for cows—I had been keeping sheep—and as manure was one of the prime objects I was working for, the basement was converted into stables, arranged with a drive-way behind the cattle, a gutter for the droppings, the whole cemented, and whenever it is possible to get into the fields with a load, the manure is loaded from the stable and hauled out and spread where it is needed. There is one thing needed to complete the equipment, and that is Mr. Terry's covered yard for the balance of the manure. Every year I dislike more and more the idea of our winter and spring rains carrying off the most valuable portion of what is left in the yard, as it annually does.

There is one thing in connection with corn ensilage that ought not to be forgotten, viz., corn when at its best, that is, when in the dough stage of growth, is not a *complete* ration for either beef or milk. Some of the elements necessary for their

production are lacking. Oil-meal, cotton-seed-meal, or wheat bran, will supply these, besides leaving some of the most costly elements of plant-food in the manure. I have not the figures at hand, and am unable to give the exact amount of plant and animal-food in each, but am sure the figures will bear me out in saying, that the plant-food left in the manure, will equal half the cost of either, when fed to cows for milk or beef. Several of the patrons of our factory tried, during the last two years, the use of bran to supplement their dried-up pastures, and nearly all abandoned it, because they could not make as much or more than its cost in the increased flow of milk, leaving the increased value of their fertilizers entirely out of the calculation.

Perhaps they were right, for it is a lamentable fact that a large share of the fertilizing elements are yearly flooded from the yards into ditches and creeks. Another advantage that ensilage has over any other feed, is its adaptability for feeding meal or bran, although the cattle will eat every morsel and lick their mangers clean with nothing but ensilage. It is just moist enough to retain the light bran or fine meal, and is easily mixed through the whole mess, while if fed with dry feed it must be fed by itself.

In furnishing milk for a cheese factory the cows are left dry through the winter, and I have taken advantage of this by feeding up the straw and dry corn fodder during this interval.

My silo consists of two pits, fourteen feet square inside, and twenty feet deep, the bottom on a level with the feed floor. I commence using out of the first pit when the ensilage is put in, not even waiting for it to cook, usually about September 1. This will last as long or longer than the factory runs, about December 1. Then the cows are put on dry feed, and the second pit is opened about March 1, and will last till grass is good, or till about June.

Last season when we turned out to grass, there were about two feet left in the bottom of the pit. In August the cows fell off in their milk on account of short pasture. We cleaned a few inches from the top and found the balance as good as ever. In two days after beginning to feed it the cows had increased a hundred pounds per day, and kept it up as long as the ensilage lasted.

I commenced with a rotation of corn on one-year-old clover sod, followed with oats and that with wheat, seeded to clover. The clover was pastured, thus leaving the hay crop entirely out of the rotation. The fields are arranged so there are no more fields than crops, and so that the end of each comes as near the barn as possible. I am aware that by pasturing the clover I fail to get the full value of clover as a fertilizer, but here comes the "ground-hog argument" again, for with the draining, clearing and breaking ten acres, building fences, repairing barns and increasing our stock of cows, besides paying interest and part of the principal, we had to go slow with buying fertilizer. Now, as we are comparatively "out of the woods," the intention is to seed thirty acres to clover, and leave oats out of the rotation, put up more ensilage and make some clover hay. By this means the cows can be induced to do their best, by having a light feed of hay for their mid-day meal, and we shall take one more long step in the direction of keeping the cows entirely off the land. Another advantage is that it will materially lessen the labor, for we can sow wheat after corn, and once plowing will answer for a whole rotation, and the manure can all be hauled in winter and spring on clover sod, saving the labor of top-dressing in a very busy part of the season, and also saving some of the manure from being washed away.

These are some of the arguments that induced me to try ensilage as a feed, and my experience for five years fully demonstrates their reasonableness.

Not long since I saw an estimate by some one to the effect that in ten years more the increase of population would overtake production, and we would be obliged to find more land to provide for Uncle Sam's growing family. I believe when a majority of the farmers get out of the old ruts, send their boys and girls to college

and thus be able to apply more *brains* to farming, that the whole area of cultivated land could easily be made to *double* its present production, and then the limit would not be reached. I visited a farm in Wisconsin where 100 cows were kept on 200 acres. There were sixty-five acres of ensilage corn growing, and the income kept the owner like a prince. Four miles from Swanton, on the edge of Lucas county, is a farm of 100 acres, where nearly the same ratio of cows to acres is maintained, and the fertility of the land has increased from seven bushels of wheat per acre, ten years ago, to forty-one bushels last season, sowed after ensilage corn, without plowing and with no fertilizer but what has been made on the farm, and the owner seems to think that the limits of production have not yet been reached, for he is building more silos and increasing his stock.

Of course such a state of fertility can not be reached at once, but with a proper plan of rotation, steadily adhered to, stock enough to eat all the rough feed, and all the grain, or its equivalent, a careful saving of all the manure, and in a few years we would hear the last of the cry of "hard times," and be ready to meet the increasing demands of our ever-growing population with a corresponding increase of production.

HORTICULTURE—THE ORCHARD, GARDEN AND FOREST.

SPRAYING TO DESTROY INSECTS, AND TO PREVENT FUNGOUS DISEASES OF PLANTS.

BY W. J. GREEN, OF THE OHIO EXPERIMENT STATION.

We do not spray to destroy insects until they appear. It is seldom that we attack them in any stage of their existence than the one in which they do their mischief. It is true, that we may do so in some cases, as, for instance, the eggs of certain insects may be destroyed, or we may make the attack upon the insect in the stage or transformation before the eggs are laid.

The most common method, however, is to wait until we see the pests beginning to do harm. In most cases this plan works well enough, and only in those cases where it does not do we need to take extra precautions to prevent damage.

With fungous diseases the cases are quite different. When a plant has become diseased, because of a parasitic fungous growth, it is too late to apply a remedy. The only way to fight a fungous disease successfully, is to prevent it getting a foothold.

If this principle is kept in mind it is as easy to fight a fungous disease as to destroy insects. We need to know something of the life-history of both classes of enemies in order to cope with them, and happily, very much knowledge of this sort is at hand. We know, at least, where some of the weak points are in both insects and fungi, and are able to control many, if not all, by making the attack at the right time and place.

It will be possible in this paper to name a few only of the insects and fungi that are injurious, and to describe the methods of combating them. This will be done without any attempt to follow out a logical order, but simply to name some of the most important plants, together with their enemies and to give remedies.

The Apple.—Soon after the blossoms fall the codlin moth lays its eggs in the calyx or blossom end of the young apples. These eggs soon hatch and the worms eat their way into the fruit. In seasons of scarcity nearly all the apples are wormy and drop prematurely in consequence. When the crop is good this premature dropping is beneficial rather than otherwise, but a large share of the crop is so wormy as to be greatly injured for market and in keeping qualities. The apple-scab is often more harmful than the apple-worm. This scab is a parasitic fungous growth which commences to develop in the spring as soon as the leaves open. It is found upon both leaves and fruit, often doing more harm to the former than to the latter. It is found upon all varieties, but does more injury to some than to others. It may do so much harm as to render half of the fruit unfit for market, and it does serious damage in preventing the development of the fruit, by sapping the vitality of both leaves and fruit. Sometimes it causes the apples to drop prematurely, thus adding to the insect injury, and it may also sap the vitality of the tree to such an extent as to prevent the formation of fruit buds for the succeeding season. Paris green is the remedy for the apple-worm, and copper sulphate (blue vitriol) for the apple-scab. Since the apple-scab fungus appears early, and we are to prevent rather than cure the disease, we must commence our warfare long before we can see any signs of disease. The proper time to make the first application is about the time the buds begin to swell, or a few days later. Copper sulphate alone will harm the foliage, hence lime

is used to neutralize it. Dissolve four pounds copper sulphate in two gallons hot water, slake four pounds quicklime, and add to the copper sulphate solution, straining the milk of lime, or lime water, through a brass wire sieve, as it is poured into the copper sulphate solution. Add water to make fifty gallons in all.

This is known as the dilute Bordeaux mixture, and is to be sprayed over the trees at the time stated. The second spraying is to be made just after the time of blooming. The reason for spraying at this time is to poison the young apple-worms soon after they hatch, and before they have eaten into the apples. *To make this work effectual it must be done soon after blooming, and before the apples have turned down.* Paris green or London purple is used for this at the rate of four ounces to fifty gallons of water. It may be used alone, or in combination with the dilute Bordeaux mixture, and the latter plan is advised for several reasons, but principally because this course saves one application, since the insecticide and fungicide need to be applied at about the same time. The third spraying should be done a week or ten days later, with the same combination mixture of insecticide and fungicide. A like period of time should intervene between the third and fourth sprayings. The fourth spraying should be made with dilute Bordeaux mixture alone, since it is not necessary to use Paris green for more than two applications.

For early varieties but three sprayings are best, as the mixture sticks for a considerable time, and it is not desirable that it show on the fruit when ripe, although it is not deleterious in the small quantity that is likely to be present.

The benefit of this treatment to apples is sufficient to repay the cost many times over. At the Experiment Station in 1891 the market value of some varieties was doubled, and with all the improvement was very marked.

The average cost per tree for the season, counting four applications and allowing for labor and materials, does not exceed fifteen cents. The cost for materials alone is about five cents for the season, for trees of medium size. Spraying apples as advised preserves the foliage, hence is conducive to the health of the trees; it prevents premature dropping of the apples, while those that come to maturity hang on the trees longer, thus windfalls are fewer; the size of the apples is increased and the appearance improved, which enhance their market value; and finally, their keeping qualities are improved.

Plums.—The well-known curculio, which punctures the young plums, causing them to drop prematurely, may be kept in check by spraying the trees three or four times with Paris green or London purple, making the first application soon after the blossoms fall, and once a week thereafter. It is not safe to use more than two or three ounces of either of these poisons to fifty gallons of water, on plum trees, and even then the mixture must be kept well stirred, or damage will be done the foliage. Plum leaves are subject to the attack of a fungus, called the "shot-hole" fungus, because it makes small round holes in the leaves resembling shot holes. This fungus causes the leaves to drop prematurely, and the application of Paris green, and more especially London purple, makes the leaves drop still worse. Where this disease is present it is best to use the diluted Bordeaux mixture in combination with the poison. This preserves the foliage and protects against the injurious action of the poison. The only precaution necessary is not to keep up the sprayings so late in the season as to leave a coating of lime on the fruit when ripe. Two or three applications of the diluted Bordeaux mixture are sufficient.

This plan insures a crop of plums, and is much cheaper than jarring. In many cases the trees ought to be sprayed for the "shot-hole" fungus and the addition of Paris green for the curculio increases the cost but a trifle. It is not known that spraying will prevent the black knot of plums, but more indications lead to the belief that it will.

Pears.—The reasons for spraying pears are the same as given for spraying plums. The curculio attacks the young pears, which do not drop, but become knotty and

worthless for market, and a fungus causes premature dropping of the leaves of many varieties. A scab also appears upon the fruit causing disfiguration, and often cracking.

The mixture to be used is the same as that advised for apples, and the method of procedure is the same.

Quincea.—For the leaf spot use the diluted Bordeaux mixture.

Cherries.—For the cherry-worm spray three times with three ounces of Paris green in fifty gallons of water. The same combination may be used as on plums, but not more than once on early varieties.

Peaches.—London purple can not be used on peach trees, in any quantity, except early in the season, without injury to the foliage. Paris green diluted, say two ounces to fifty gallons of water may do no harm, but even with this quantity there is some danger. Three ounces of either poison to fifty gallons of diluted Bordeaux will not harm peach foliage, and if applied as directed for plums will keep the curculio in check, and prevent much of the rot that usually occurs in peaches. Experiments have not fully demonstrated the value of this treatment for peaches, and some caution should be exercised by those who experiment for themselves, as peach foliage is very tender, and injury is liable to result if the mixtures are not properly made and carefully applied.

Grapes.—Grape rot may be prevented by the use of Bordeaux mixture. It has not been demonstrated that the diluted mixture will answer the purpose, but no doubt it will. That which was used in the experiments that have been made, was three and one-half times the strength of that given above. The first application should be made about the time the leaves are opening, and the second just before blooming. The third, and last, soon after the grapes set. If the Bordeaux mixture is used much later it will adhere until the grapes are ripe, which is objectionable, although not dangerous to the health of consumers, since the quantity of copper that is likely to remain on the grapes is less than that ordinarily found in many kinds of food. If any stain is left on the grapes when ripe the market value is injured, and to avoid this the following may be used for the fourth and fifth application: Six ounces of copper carbonate dissolved in two quarts of ammonia and diluted with water to fifty gallons.

Potatoes.—To prevent the potato blight, spray once in two weeks, from the time the potatoes appear above the ground until the tops fall over, with diluted Bordeaux mixture and Paris green or London purple, of the same strength as advised for apples. This treatment prevents the premature dying of the tops and kills the bugs. It has added to the crop twenty per cent. to fifty per cent. and can hardly fail to pay in any case, since both blight and bugs prevail in nearly all localities.

Spraying Machinery.—This topic can not be fully discussed here, nor is it hardly necessary as the catalogues of manufacturers give sufficient descriptions in most cases. A force-pump is required, as a matter of course. All parts of the pump with which the liquids come in contact should be of brass. A knapsack-pump, or one that is carried on the back will answer for spraying bushes and potatoes, but generally, a pump mounted on a barrel so that it can be drawn about by a horse is better. Twenty-five or thirty feet of hose is required to reach the top of large trees. The end of the hose may be attached to a pole ten feet long, or a half-inch brass tube of the same length may be used in place of the same length of hose. To this a good nozzle should be attached, the best being the Vermorel nozzle and the next best the Nixon, although there are many other good forms. With a good outfit, spraying is a very easy task, and no work that can be done in the orchard or vineyard pays better.

PRINCIPLES AND PRACTICE OF PRUNING.

BY W. W. FARNSWORTH, WATERVILLE, O.

The art of pruning deserves more attention than it receives, as it is one of the most important branches of the horticultural art; in fact, it is an art of itself.

We see comparatively little in print on this subject because it is difficult to reduce our knowledge of it to "black and white," and for this reason many seem to have gotten the idea that pruning is one of the mysteries of the profession, a sort of "unwritten work" of the craft, as it were, that can not be put in cold type, but must be handed down by word of mouth to the favored few who are properly initiated. This idea is partly right and partly wrong. The true horticulturist of this age has no "secrets of the trade," but at the same time all the information he may be able to impart to the novice will not enable him to prune successfully without practice and study. He must know what he wants to do as well as how to do it. There are many of the operations of nature that are yet a mystery, but we may know enough of the manner in which she works to enable us to work in harmony with her.

There are two extremes in the matter of pruning. The one class believes that nature's works are perfect and should be followed closely, and deprecate all pruning. Many believe this system to be correct, whilst others imagine they believe it because, as one of them once said, he was "so constituted that he found it easier to wait than to work." The other extreme would pattern closely after English methods, forgetting that in the cool, moist atmosphere of Great Britain less foliage is required than in our dryer, hotter climate. The advocates of little or no pruning claim that every leaf or branch removed is an injury to the tree and contrary to nature, and to a certain extent they are correct. However, we should lead nature and take advantage of her operations to assist us in attaining our ends and not make our plans subserve to hers. Nature, unguided, produces the crab and the choke pear. Nature, led by the skillful horticulturist, produces Grimes' Golden and Jonathan apples, Bartlett and Seckel pears.

After the world was finished man was authorized to "dress and keep it." Pruning the tree is like governing the people. The less we have of it, and yet attain the desired end, the better. It may, in some sense of the word, be an evil, but it is a necessary evil, and the lesser of two evils.

The main final object in pruning is fruit from fruit trees, and beauty for ornamental trees. To obtain the most desirable fruit in the greatest quantity we must first secure a healthy, vigorous tree, well balanced in root and branch, and to do this we must begin early. We must, in buying our young trees, reject those whose head is formed too high or too low, or where there is a bad fork. The height at which to form the head must depend somewhat upon the method of after management which it is proposed to adopt.

I do not believe it is wise to head a tree high for the sake of being able to drive a team close to the trunk after it comes into full bearing. The ground under the limbs might better be devoted to the use of the tree and its roots given sole possession to the exclusion of all other crops, unless your land is high priced and you are able and willing to fertilize liberally, in which case double cropping may be allowed,

When trees are headed high I would advise shading the south-west side of the trunk by a wide stake or board.

I would start the heads of apple trees from three to four feet from the ground, depending, somewhat, on whether the tree was of an upright or drooping habit of growth. Pears, plums and peaches I would head a foot lower.

At planting I would leave from three to four branches. If too many branches are left the head soon becomes so thick that we are obliged to trim off many of the

side branches, leaving the main limbs comparatively bare of fruit and foliage near the trunk, where it could be easier supported, and throwing the burden of fruit out nearer the extremity of the limbs and causing them to split down readily.

I believe a light, thin soil has a tendency to a more bushy growth of tree than strong, heavy soil.

We should also aim to have the tree heaviest on the side toward the prevailing wind.

For the first few years after the tree is planted it is better to prune twice a year. It will not occupy much more time than one annual pruning will require, and better results will be secured.

A great deal depends upon starting the tree properly. It requires no more time to rub off a young shoot in July than it does to cut it off the next winter or spring after much of the energy of the tree has been expended in producing it. Besides the wound heals more readily in the first case.

Until the young tree comes into bearing, about all that can be done is to preserve a well-balanced tree, having its limbs neither too thick or too thin. Some varieties of trees grow very irregularly and, in such cases, the shoots that so far outstrip their neighbors should be cut back that the weaker ones may overtake them.

Some young trees are inclined to shoot upwards very rapidly. In such cases the leading shoots should be shortened severely. Limbs that are too much of a drooping or straggling tendency should also be removed. See that none of the limbs rub each other.

When the tree comes into bearing, the matter becomes a little more complicated. We prune then to secure the greatest possible amount of well-developed fruit without injury to the tree. We do not wish to so overload it that the fruit will be inferior, or that it will be unable to make a moderate growth of wood, and to develop a supply of well-ripened fruit buds for the next year's harvest.

Dwarf trees will require more pruning than standards, for the reason that their root system has been purposely restricted by budding on small roots in order to hasten fruitage, and the top must be held in check to correspond with the roots.

In pruning always make a smooth cut close to the shoulder, or enlargement, at the joint, and cut squarely across the branch to be removed, that the wound may be as small as possible and heal more rapidly. A stub, one or two inches in length, will never heal over, but slowly decay back to and into the main branch.

By beginning in the life of the tree, and keeping it continually under watchful control and guidance, it will seldom be necessary to remove any large limbs, hence most of the pruning can be done with a knife. When necessary to remove large limbs, I use a sharp fine-toothed saw. I consider the old-fashioned pruning chisel an abomination for several reasons. In using it to prune a large tree from the ground one can not easily see just what and where to prune. The cut is usually more or less sloping, leaving a larger exposed surface to heal, and often leaving a sharp stub that is an annoyance to pickers as long as it lasts, and an injury to the tree when it decays. There is also danger of bruising the bark of the tree.

The best time for pruning is evidently between the falling of the leaves in the autumn and the swelling of the buds in spring, and if every wound were immediately coated with some substance that would effectually exclude air and moisture, it is evident that the sooner all unnecessary and superfluous branches were removed, the better for the remainder of the tree. It is doubtful, however, if the advantages of fall pruning are sufficient to compensate for the labor and expense of covering each cut surface, and if they are not so covered, the natural tendency must be for them to so dry out and freeze out, that they will not heal over as rapidly as if freshly cut in the spring.

Theory then, as well as the general practice, would seem to indicate that late

winter or early spring was the most suitable time. My own practice is to delay as long in beginning as I can safely, and be sure to finish before much movement of the sap.

So far my remarks have applied mainly to the apple, pear, plum and cherry.

The peach requires constant cutting back to keep its young-bearing wood nearer the trunk of the tree, otherwise the fruit and foliage will soon be at the extremities of long naked branches.

Grapes may be pruned in fall with good results, as it is not expected that the cut surface will heal, and a stub, one or two inches long, is left beyond the last bud, and cut off and thrown away at the next pruning.

As we have frequent inquiries in regard to pruning small fruit, a few words in regard to them may not be out of place, as many are beginning their culture each year.

The young canes of the black raspberry should have the tops pinched off when they have attained the height of eighteen inches (ten inches the first summer after planting), then do no more pruning until the buds swell in the spring, except removing the dead wood after fruiting, if that can be called pruning. Then, as leaves are about to start, cut back the laterals, leaving them from eight to twelve inches long.

Blackberries are trimmed in the same manner, except that the young canes are not pinched until about two and one-half feet in height. Some growers prefer, however, to allow the Snyder to grow without pinching, in order to reduce the amount of bearing wood.

Currants should be cut back to six or eight buds when first planted (one-year old plants are preferable), and if this does not produce at least half a dozen branches from near the ground, I would cut back again until the requisite number was secured. After this is accomplished, all the pruning necessary for the first three or four years is to thin out superfluous and crooked or straggling shoots, and cut back those whose excessive growth threatens to destroy the symmetry of the bush. After a couple of crops have been borne we should begin gradually cutting out its oldest wood and replacing with young wood.

The same method will apply to the gooseberry, except that more thinning will be required to avoid a tendency to mildew, the great enemy of the gooseberry.

THE FARMER'S ORCHARD AND GARDEN.

By T. J. PORTER, NEW ANTIOCH, O.

In preparing this paper I have been more than ever impressed with the fact that farming is not one of the exact sciences, but that we are groping in the dark, not only for underlying principles but for our methods also.

The facts and conclusions that I offer you to-day are based upon my own experience and observation in this and adjoining counties.

I offer them with diffidence, only hoping that like the dull, cold steel smiting the flint, some sparks may be elicited that may relieve, to some extent, the darkness that surrounds this as it does every other question in process of experimentation.

It is not complimentary to our kind to have to acknowledge that it takes so large a portion of our time and thought to get enough to eat and to wear.

But it is a fact: and to this end we have a department of agriculture, experiment stations, farmers' institutes, and so on. Upon the farmer's ability to produce a constant succession of crops and maintain the fertility of the soil, depends the whole question of the continued existence of mankind upon the earth.

Vast as is the importance of increasing the yield of grain and meat, that is not all, but the use of these may be supplemented and their benefits vastly increased by a careful concern for the products of the

ORCHARD AND GARDEN.

This is my theme to-day, and before going into the details of the subject, I would like to make some general remarks as to its relative and particular importance.

First, its economy; and by economy I do not mean that miserly saving by which we deny ourselves the necessities of life in order to put money in our pockets. If we produce our own fruit we have it in abundance almost without cost, instead of buying the products of distant lands, the prices greatly enhanced by the profits of dealers and the cost of transportation. The shelves of our country groceries are filled with the canned products of other regions, and it is not uncommon to see farmers buying these things when they could be just as well produced at home.

Second, the beneficial effect on health of the constant use of fresh fruits and vegetables. This is of very great importance, and is universally conceded.

Third, it adds greatly to our comfort and happiness, by the direct and immediate gratification of our tastes and of our love of the delightful and beautiful in nature.

It has been said that when a farmer has been able to make two blades of grass grow where only one grew before, that he is a public benefactor. This is just as true of that grower of fruit who improves or increases the fruit product, and moreover, it may be imputed to him for righteousness; for is it not written "that by their fruit ye shall know them"?

First in importance is the apple-orchard. Generally this is the most neglected spot on the farm, and the product, as it appears when it is on sale in stores of this and other places in the country, is just what might be expected from the condition of the trees. Moss-grown and old before their time, strangers to the pruning knife and saw, veritable thickets of dead and decaying branches and rank water-sprouts, it seems wonderful that they should ever bear any fruit at all.

Such an orchard may be restored to usefulness, and if made up of good varieties, it is better to take that plan than to cut it down and commence anew. First, make your feeding lot for hogs somewhere else. If there is any such thing as a "root of all evil," it is a hog's snout in the orchard. It may be proper to allow the pigs an occasional run in the orchard during the time that the wormy apples are falling, but that is all.

Then in the fall apply a generous quantity of barnyard manure; plow shallow early in spring, and harrow and cultivate through the summer until August. Keep this up every time your orchard produces a crop and, unless in the last stage of old age and decay, you will restore it to the vigor and productiveness of youth, and delight your heart with its ample returns of red and golden fruit.

If you would plant a young orchard, buy three year-old trees of kinds known to do well in your vicinity. Touch lightly of novelties—they are apt to be disappointing. Buy of a home nursery or from an agent that you are acquainted with. Do not deal with strangers and irresponsible parties. Have the ground in good condition—plant thirty feet apart. Cultivate every year some hoed crop, until the trees begin to bear, when the crops should be left off. Unfermented manures should never be applied except in the fall, and never close to the tree. After this it is best to continue the cultivation, but it may be left off provided the trees are mulched every fall with barnyard manure to prevent them from getting sod-bound.

Red clover should not be allowed as a crop among the trees at all. If the season should be dry, which is not uncommon, the long roots of the clover saps the moisture from the soil and both tree and crop suffer. Do not sow any kind of grass in the orchard, but if cultivation is to be stopped, simply keep the weeds mowed

down, and allow the white clover and native grasses to come in gradually. Prune annually, top-dress liberally every fall, and there will be no off seasons except when the fruit is killed by late frosts in the spring. When the fruit sets too thickly it will pay to thin out while it is yet small; say as large as hulled walnuts. This may be very expeditiously done by wrapping a suitable pole with cloth so as not to bruise the limbs, and jarring the fruit off in that way. This improves the fruit that is left to ripen, prevents breakage and greatly lessens the liability to off-seasons.

It would probably be safe to say that not one farmer in twenty has, even in the most favorable seasons, an ample supply of pears running through the season from July to December.

This is not living up to their opportunities; for the pear is as easily grown as the apple, and when the right kinds are grown it is one of our most delicious fruits. The cultivation and treatment may be in every way the same as for the apple, except as to pruning, of which very little is necessary. The greatest enemy of the pear tree is the blight, the cause and cure of which is not yet understood; but this should not prevent any one from planting trees when they do as well as they do in this county.

The farmer will do well perhaps to confine himself to standard trees, because of the ease and simplicity of their cultivation and treatment. But there are two varieties, the Bon de Jersey and Duchesse, that are not at their best as standards, and that do so well as dwarfs and produce such delicious and superb fruit that I feel inclined to recommend them to those willing to give the requisite care and attention. These belong in the garden and should be planted ten feet apart, the soil kept well enriched and cultivated with the spade and hoe; no horse or plow should ever come among them. The soil between the trees may be utilized by growing early vegetables thereon. The annual growth should be cut back at least half every year.

The plum is another fruit that is almost a stranger to the farmer's orchard. This should not be, as it is a most desirable fruit both for dessert and cooking, and sometimes gives a full crop when other kinds fail. True the black knot is sometimes troublesome, and the curculio comes in for a share of the fruit; but there is no crop that we raise but has its enemies. Wheat is liable to the attacks of the Hessian fly, to winter killing, to smut and rust and weevil, and when in spite of all these we have secured a crop the profits may be cut off by the bulls and bears of the market. But the cultivation of wheat goes on all the same. So of other things, and our fruit should be no exception. The same industry, skill and perseverance will bring their rewards.

Black knot may be restrained by constant care and watchfulness in cutting off and burning the knots. Many, perhaps all of the American varieties, and there are some very good ones, are not subject to this disease at all. The Kelso seems to be less liable to it than many of the other superior varieties. This plum is believed to have originated in this county, and first brought into notice by an honored citizen whose name it bears. And a man who has done this much in the interest of horticulture is more worthy of honor than he that captureth a city, and more worthy to live in the grateful remembrance of his people than many a so-called hero who is immortalized in song or story.

It is no great task to circumvent the curculio—jar the trees, catch the bugs and kill 'em tells the whole story, and there is nothing to hinder the farmer from having plenty of plums, and they will repay him for the labor.

Almost every farmer has more or less cherries, and they are so hardy, do so uniformly well, and give so much for so little, that there is really no reason why every body should not have them in profusion, and as to their culture it is only necessary to say that it may be the same as the kinds previously mentioned.

The peach is the most delicious and the most popular of all the large fruits common to the temperate zone. It is not quite as hardy as the apple, and yet it adapts itself to a wide range of conditions, and its cultivation is common from Maine to Florida. On the farm its place is in the garden rather than the orchard, as cultivation must be continuous although the soil should not be too rich—about good enough to produce forty bushels of corn per acre will be near enough to the mark. Plant budded varieties. It is all a notion that seedlings are more hardy and productive. Plant about eighteen feet apart. Raise corn or any hoed crops on the ground until the trees occupy it. Never cultivate later than August 1st. Hunt out and kill all the borers in June and August, and your frequent crops of peaches will cause wives and children to rise up and call you blessed.

In the garden also belongs the small fruits. Plant raspberries in rows seven feet apart and three feet in the row. The black-cap varieties do best on our soils, and is the most popular berry here. They need annual cultivation. Cut out the old wood each year—cut back the bearing wood in the spring to about two and one-half feet. Tie up the canes of each hill together and no stakes will be needed—the canes support each other. Such a plantation properly managed will produce crops for many years, and the fruit ripens at a time when it is a very acceptable addition to the farmer's bill of fare, and if there should be a surplus it finds ready sale at remunerative prices.

Of the red currant every farmer's garden should boast at least two dozen plants, and one-half dozen gooseberries. They require the same treatment. Of the currant there is nothing better than the red Dutch, either as to quality of fruit or productiveness. There are some that the tree agents like better because they can sell them at a higher price. There are several good varieties of the gooseberry. Do not allow weeds or grass to grow among the bushes; a close sod would soon prove fatal; but they are impatient of deep cultivation, and the most satisfactory way of managing them will be found in an annual top-dressing of barnyard manure. The currant-worm is the only insect enemy that inflicts serious damage upon these fruits, and they are more easily destroyed than the potato-beetle. A little powdered white hellebore dusted on the leaves when the worms first make their appearance in early spring will do this business. And there is no other fruit that is so certain to give good crops as the currant and gooseberry, and none more acceptable in jams and jellies than these. Thanks to the McKinley tariff, under which sugar is so cheap, everybody can have them.

In the last ten years there have been two nearly total failures of tree fruits, and once in that time elderberries brought one dollar per bushel. I do not remember quotations on pokeberries that year—perhaps they were a failure too. That year our crop of small fruit was abundant for home use, and some to sell.

The fruits that grow upon trees and hang suspended in mid-air, in contact only with the pure breezes of heaven and the gentle dews and the radiant sunshine, ought to be and we think of them only as pure and luscious.

But what can I say of the strawberry, with its lovely cheek resting upon the bosom of the earth, listening for the whispered formula by which that combination of juices, flavors and tender, delicate pulp, called the strawberry, is created, and of which the good Dr. Johnston said that, "Doubtless God might have made a better berry but doubtless he never did."

Now, how many farmers have an abundant supply of this wholesome and delightful fruit? Yet they are as easily produced as potatoes. It may not be desirable to raise them in such quantities that each member of every farmer's family should be required to consume three quarts as a daily ration. That may be proper enough for those extravagant enough to indulge their work-horses on an exclusive diet of clover hay, but let us at least have all we want. I believe in the farmer having all he wants, and that the best is none too good.

Plant in rows three feet apart and eight inches in the row, on good soil, two rows of Crescent seedling to one of Sharpless. Give good cultivation until middle of August and allow them to spread and form a matted row. Mulch thinly with straw or cornstalks when the ground freezes first in the winter, and, if spring frosts do not blight your hopes, success is certain. Utter failure from this cause is rare. The Crescent is more nearly iron-clad and weed-proof than any other kind known to the writer. Renew your plantation once in two years and you will always have berries.

The grape is another fruit of which there is not enough. The catalogues are full of new and choice varieties that should make one ashamed to remember that the fox-grapes and the sour post-grapes were ever considered eatable. A grape-vine may be planted almost any where, and trained against a house, a trellis or a stake, and almost any system of pruning that does not cut away quite all of the wood of the previous year's growth, will insure a greater or less crop of fruit.

The quince is another desirable fruit that is too much neglected. This is a social kind of tree, and likes a place near the house where it will give the most satisfactory results. Plant two or three trees in some sheltered situation, train to single stems, keep off all watersprouts and suckers, top-dress deeply every fall after they begin to bear, cut back half of the annual growth, and the crop is more certain than the apple. For jellies, for preserves, for baking, and for canning, they are unsurpassed.

Before passing to the second branch of my subject, I would like to draw a comparison between fruit-growing as it is among the farmers of this county and what it might be. As it is, there is only one kind of fruit, viz., the apple, produced here in such abundance that all have enough even when the season is most favorable. Of all other kinds there is never enough, and some years an actual scarcity.

Every year very considerable sums of money are paid out for canned and dried fruit, and while even this is better than not to have the fruit at all, it is not economical, nor is the fruit so good, nor the supply so constant as when produced on the farm.

Now, as it might be, and as it clearly appears it should be, if all the different kinds of fruit that are known to do well in our soil and climate are given intelligent care and attention, there will be no off-years in the supply, and its effect on the prosperity, health, comfort and happiness, and even on the social and moral well-being of the farmers, would be incalculable.

It seems almost an impertinence to offer any suggestions upon the management of the garden; still there are some points upon which improvement might be made even here. The garden should be large enough, and laid off in such a shape that cultivation may be done mainly by horse-power. This will produce better crops at a smaller expense, and will take away all excuse for allowing your women folks to make and tend the garden. To be sure there is nothing wrong in a woman's helping in the garden, if she wants to, and has the time; but, as a rule, the farmer should tend the vegetable garden, and if the wife has any time for out-door work, let her employ that in the cultivation of flowering plants. This branch of gardening is one in which most women find especial pleasure, and it seems that flowers are necessary to the full and complete development of our many-sided nature. Be that as it may, we know that they are a wonderful source of gratification and pleasure to most persons, and to the gentler sex their cultivation and contemplation of these forms of beauty and fragrance, is a rest from weariness and care, and a place for sorrow.

Then let every farmer make ample allowance for the flower-garden, and see that his women folks have the time and means for its improvement, and they will do the rest.

A few japonicas and syringa bushes, and the old fashioned but ever-lovely lilacs and roses, tastefully disposed about a farm-house, will give it an inviting and home-like appearance, and actually add a money value to the property.

And to make this easier of accomplishment, the garden and house-yard should

be in the same inclosure, and then they will be alike protected from the incursions of the farm stock. Farming can not be so specialized that the cow and the hen can be divorced from it. Some few seem to be built that way, but the average farmer will find it best to run his business on the mixed system, and to make gardening satisfactory, the garden should be well inclosed.

To produce results at all satisfying, the garden should be kept in the highest state of fertility, by the application of well-decomposed stable manure. The management of the standard vegetables is generally so well understood that it appears necessary to mention but three.

The lettuce, the universally raised, and the main dependence for salads, is very seldom at its best in the farmer's garden. The seed should be sown quite early; in a hot-bed, if possible; if that is not available they may be started in shallow boxes under the kitchen stove about the middle of February, to be transplanted in very rich soil about the first of April, giving each plant one foot square of space, and cultivating well. In this way the heads grow large and the leaves thick, and with a tenderness and flavor in wide contrast with the small thin leaves that exacts so much of the time and patience of the careful housewife.

Asparagus seems to be but little esteemed in the country; yet, on account of its earliness, its long continuance in season, and excellence, it is worthy of first place in the garden. Fifty two-year-old plants, set fifteen inches apart in the row in good soil, will furnish a good supply for a moderate sized family. No cuttings should be made until the third year. After that it may be cut closely until the middle of June, and such a plantation will last twenty years or more.

Every farmer should produce his own melons. Of course southern melons can be bought very cheaply, but they are frequently very poor in quality, and never so good or so wholesome as they are when used in their best estate. The chief enemy of the melon is the striped beetle, whose attacks can be easily circumvented by taking two small twigs—willow is best—and, sticking the ends into the ground on each side of the melon hill, have the sticks crossed and arched so as to support a covering of millinet three or four inches above the ground. Cover the edge of the millinet with a little earth and the striped bug will have to hunt other pastures. Leave this protection on until more room is needed for the plants.

A paper on the orchard and garden would not be complete without some reference to the honey bee. This is the farmer's helper and gathers up for him the fragments, that nothing be lost. The cheapest labor that we have and no competition of pauper labor, helped by reciprocity and the McKinley tariff, can drive it out of business. The bee products in this country are estimated at several millions of dollars and might be increased tenfold. At all events, in any favorable season, there is enough honey goes to waste, for the lack of bees to gather it, to furnish every farmer's family with all they want.

There is nothing mysterious about the business of bee-keeping and no greater difficulties or risks than attend the keeping of other stock. Three or four stands handled with reasonable intelligence and care will furnish plenty of honey for the average family.

And now, in conclusion, there is a grace and dignity in the cultivation of fruit, and a freedom from contact with the cruder elements of nature that attaches to no other branch of agriculture.

The aged resident of the city, when he retires from business, longs for a place in the country, where, surrounded by trees and vines, by abounding flowers and fruits, he may pass the remainder of his days in peace.

Poetry, in all ages, has been full of graceful allusions to the delights of horticulture; and the perfect picture of man's highest felicity of peace, prosperity and content is where he sits under his own vine and fig tree with no one to make him afraid.

STRAWBERRIES.

By E. K. HUMES, URBANA, O.

MR. PRESIDENT, LADIES AND GENTLEMEN: By request of your committee I present a paper devoted to the strawberry.

If my experience during the past ten years in cultivating this fruit can be of benefit to others we shall gladly give it; therefore, shall not refuse, in a measure, to comply with your request, as we have never been known to go back on the strawberry, not even when brought on the table and served with an abundance of sugar and cream.

Its cultivation is attracting more or less attention in all sections throughout the country. It is a business like every other, which, to be followed successfully, must be learned, and that knowledge comes chiefly from experience.

Every business requires careful study as well as careful management to make it a success. All classes of industry, and this is no exception, have their drawbacks, if not in one way then in another, some of which we will notice hereafter.

In this business, like many others, it requires energy and push to be successful. Much depends on the management in selecting proper soil, location, tested varieties, and then proper cultivation at the proper time. All these tend to successful culture.

Then let him, who expects to win in the race, be ever on the alert, for the strawberry is not without its enemies, for while there is a bright side with a goodly share of sunlight and bright expectations, there come days of gloom and seasons of disappointment to the grower. It is our desire at this time to speak more particularly of the cultivation of this berry. We believe it to be the prince of berries—America's favorite. Nature exhausted herself in its make-up; she gave it a color and aroma peculiar to itself, such as no other berry possesses, and to-day it is receiving attention from thousands of admirers who cultivate it, both for pleasure and for profit. We scarcely read a journal devoted to horticulture but the strawberry receives from it the first attention. It deservedly stands at the head of the list, and to-day there are more inquiries made concerning its cultivation than, we might say, all other berries combined.

One important question that presents itself to any one about to plant strawberries is, what variety shall I plant?

The location has much to do with the fruiting of certain varieties as well as soil. A variety may do well for one grower, while a few miles distant it is planted at a loss; then we are rightly to decide that all varieties of strawberries can not be grown successfully on the same soil. We would recommend that the intended grower would visit, if possible to do so, the fruit bed of some other grower, and there see different varieties in fruiting and determine to a great extent the varieties he shall plant, and what he may expect by like cultivation—location and soil being equal. Another important point is proper fertilization. All growers are aware that strawberries are divided into two classes, namely, staminate and pistillate—those having perfect and those having imperfect bloom. Then the grower must determine the staminate which will properly fertilize, for upon this depends the crop of berries; and by the way, much can be done in the way of increasing the size, improving the shape, and giving to the berry a finer color by the use of proper fertilizers.

Then, again, to obtain the best results, we must have varieties of different sex to bloom at or near the same time. Right here a mistake is often made by planting a late fertilizer to fertilize an early berry, or an early blooming fertilizer to fertilize a late berry. In planting we have found it best to plant five rows of pistillate to two of staminate; the rows being three and one-half feet apart it brings one variety not farther than ten feet from the other; or a better way, if not growing for market, is to mix the plants before planting—this gives best results.

Most writers tell us that any soil that will grow a good crop of wheat or corn, is rich enough for strawberries. We have found that an additional supply of well rotted manure, well worked into the soil after plowing, gave the best results.

Do not plant on land that is set to white clover or polluted with shepherd's purse, or any weed that lives through the winter. Avoid a fresh sod; choose a clover sod, after it has been tended one season in potatoes or some other hoed crop. Your land should be well drained; this is essential, and one point that should not be overlooked.

We think that, without doubt, spring is the best time to plant. We have tried fall planting to our satisfaction; there is too great risk of dry weather killing many newly set plants. Another great objection is, the labor and expense of mulching the bed is too great for the small profit that may be obtained the first season. As soon in the spring as the ground is in good condition to plow, thoroughly prepare your bed by deep plowing and pulverizing, working into the soil a liberal coating of well-rotted manure, free from seed. See that your ground is level, which can best be made so with the plank-drag. Mark your ground the long way of the bed, which should be north and south if possible—as either side of the rows can receive equal warmth and sunshine—making the rows three and one-half feet apart, then cross-mark two feet apart. My object in planting both ways is not for hill culture, but to lessen the labor of cultivation for the first three months, which can be done with the cultivator by going both ways, thus saving much labor, and insuring better and more thorough culture.

During the first three months all runners are to be taken off, which will require going over the bed frequently. By removing the runners, we obtain a vigorous and stocky plant. About the middle of July the runners should be allowed to grow, and turned the narrow way of the row, when cultivation should cease the narrow way.

The bed should be gone over after this about once in two weeks, and with the hand distribute the runners, so as to form a matted row two feet wide, with plants from four to six inches apart.

After a runner has set two plants, the end should be clipped, as after that the plants are smaller and weaker and the result would be inferior fruit.

During the fall a great many runners are found running out into the spaces between the rows. These should be destroyed by cutting them off and not turning them back into the matted row. By this method we retain nothing but strong and vigorous plants for fruiting. If the method we have described has been strictly followed, you now have a bed of plants you may rightly feel proud of. Your next step is to put on the mulch, which we defer until about the middle of December. Berries are not hurt by the early freezing, but later on by alternate freezing and thawing, loosening the roots and bringing them to the surface. We mulch with clean straw or partly rotted stable manure; we prefer the latter if entirely free from seed. If we use straw we apply it evenly and sufficiently thick to completely hide all the plants. Manure should not be applied too thick, as there is danger of smothering when warm weather sets in. We never remove the covering in the spring. If the straw is disturbed it gives the wind and sun a chance to penetrate and dry the ground, thus counteracting in a measure, the purpose for which the mulch was intended.

As soon as the picking season has ended we take the mower and mow the vines off closely, then as soon as sufficiently dry, apply the match and see that the entire bed is burned over; by this method a great many weed-seeds are destroyed and many insects that lie near the surface, while the plants by their baptism of fire are not injured, but are renovated, coming up, strong and healthy. After burning take the bar-share plow, with horn cutter, and run on each side of the row throwing the dirt from the row, leaving the row about ten inches wide. Cultivate the ground between the rows thoroughly, then use the hoe to draw some dirt to the plants. The second

season's work is light compared with the first; for a total destruction of weeds and grass the first year, allowing none to seed, lightens very much the labor the second year. As a general rule but two crops can be taken from the same ground without resetting.

To cultivate the strawberry successfully requires not only labor, but labor done at the right time, and in the right way. It requires experience and thought to know what to do and when to do it. We might here speak of some of the enemies of the strawberry. Among those not the least troublesome and destructive is the white grub, which attacks the roots and saps the life from the plants. These can in a measure be prevented by not planting on ground likely to be infested by them. Mice sometimes get under the mulch in winter and destroy the plants by eating off the crowns. These can be poisoned.

The rust is an enemy to certain varieties, injuring the crop by destroying the foliage. For this, prevention is the best remedy; do not plant varieties subject to rust. We can avoid the effects of dry weather, to a certain extent, by mulching; but for a cold wave which drives the mercury below freezing, about the time the fruit is setting, we have no remedy or prevention, but sit in helplessness realizing the truthfulness of the saying, "That all is not gold that glitters."

To those who grow berries for market we would say grow the best, and let the other fellow grow the small and inferior ones. For large, handsome, well-ripened, carefully picked and nicely crated berries are ready sale at a good price, and the grower need not feel ashamed to put such upon the market.

THE KITCHEN GARDEN.

BY MRS. DELLA MALSTER, WATERFORD, O.

The first garden that gladdened our race was the Garden of Eden, and the oracle tells us that a man, Adam, was placed in it to dress it. True, Mother Eve put in her personal appearance in a short time, not as a laborer to dress it, but—well I suppose her mission to be an ornament to the place, and to so amuse Adam as to induce him not to work too hard. We have no historical authority that she had to tease him for at least three weeks to plow the garden, or that she ever screamed at sight of a toad or an angle worm, but presume that her experience may have been similar to that of her daughters of modern date. But their arrangements were soon changed, and we are not advised that they ever enjoyed any thing like a kitchen garden. The next famous garden of which we read is the hanging garden of Babylon, which was erected by Nebuchadnezzar solely to please his wife. It was a perfect square 400 feet on each side, and arose terrace above terrace to the height of 350 feet. This, you know, was one of the seven wonders of the world.

In all ages and climes there have been gardens of flowers, shrubbery and many other things, but the one which is now engrossing the attention of many is that which produces something to satisfy the appetite and reduce the expenses of the culinary department. This we find is the kitchen garden.

Gardening can not be learned in a day, a week or a year. Men spend years in acquiring knowledge enough to make them competent to manage *well* even an ordinary garden. No one can be a good gardener without reading, but no amount of reading can enable a man or woman to enter at once upon the management of a garden and do it *successfully*. Practice is necessary—much practice, and with it careful study and observation.

In the selection of a garden spot several things are to be considered. Location, preparation of soil, when, where and what to plant, cultivation and marketing the

surplus. Fortunate is he who finds a rich, sandy loam where he desires to make his garden, but as this can not always be had in a proper location, and as many have no choice at all but just appropriate the back yard to such a worthy purpose, we must, in this as well as in many other instances, learn to accommodate ourselves to circumstances. To make a good garden of a heavy or clayey soil, first underdrain the entire spot. For this purpose use draining tile, or, if you do not care to purchase this, underdrains of stone or brush can be made which answer very well. After draining apply any thing which your good sense dictates will have a tendency to make the ground light and dry, such as rotted wood, coals, ashes, sand or gravel. Dryness and lightness of soil are the two main points to be secured. In autumn plow, then top dress with a heavy coat of woods dirt and stable manure. The ground thus left to the action of the natural elements during the winter, will be freed from many clods and weeds, and with the return of spring is easily prepared to receive the seed.

At planting remember, "As we sow so shall we reap," and that it is "pennywise and pound foolish" to use old or doubtful seed and lose the whole crop. So is it very inconvenient when the beds are all prepared to learn that the mice or weevil have destroyed your seed and you must send and buy or go and see if some neighbor has just a *little* to spare. Examine your seed box in time and if any deficiency be found send your bill to some reliable seed-house and much trouble is avoided.

Every one wanting an early garden should have a hot bed, be it ever so small. Tomatoes, peppers and very early beets will do so much nicer if started in this way. About the middle of February the hot bed should be made. Lettuce, cabbage and cauliflower should be sown quite early, and in some way protected that the plants may be ready for transplanting in the open ground. The planting of peas, beans and onions is too well understood to need any directions given save that you "are sure the moon is right, and that you enter the garden backwards." Parsnips are a nice vegetable and are not as generally raised as they should be, coming in late winter and spring when other vegetables are gone; and salsify or oyster plant which requires about the same treatment, makes an excellent substitute for oyster soup. One great trouble with most gardeners is failure to have a succession of vegetables. The early kinds being gone, there is awhile that nothing can be had. This can be avoided by planting at different intervals or different varieties of the same thing. This is especially true of sweet corn which should be planted about every three weeks from the first planting until as late as July; by thus doing you may have nice fresh corn all summer, until the frost overtakes it. But you say it is so much trouble to be always planting. So is it quite troublesome to have to prepare dinner for a number of men or chance visitors, and nothing to cook. To make the garden profitable the ground must be well enriched and the weeds not allowed to feed upon it. Neglect means failure. Constant care is necessary to keep these little enemies at bay and give the plants their proper culture, but if you find yourself very much pressed for time admit an old hen and brood of chickens and they will greatly lighten your labors. Aim to keep something growing all the time. The more crops harvested off the same ground the larger the profit. What we want is more vegetables and fewer weeds. The early crops may be harvested and later ones sown. Two crops of beans can be grown off the same ground in one season, and turnips can be sown at any time where there is a vacancy, and look better and are more profitable than weeds.

We consider berries a very desirable adjunct to the garden, and think them more convenient and less liable to be neglected than when planted elsewhere. Blackberries and raspberries should be planted in rows about three feet apart and every spring remove all the old cane; trim the vines up nicely, cutting out the tops; you will then have an abundance of nice fruit, which can be gathered at your option. And it is far pleasanter than getting up an hour earlier than usual, arraying yourself in all the cast-off garments of the family, and after traveling a mile or more through the wet weeds and grass, to find some one just escaping, leaving you the briars. And

strawberries—the acme of perfection in small fruits. Do we ever grow tired of them? Is there any thing that tickles the palate of the hungry farmer more than they? And they are so easily propagated, when we consider their great productiveness. This, coupled with the fact that they are the first fruit to mature in either garden or orchard, makes them most desirable, indeed.

A word about flowers in the garden. We frequently hear women remark that they have no time to cultivate flowers. Perhaps they can not have the time to raise some of the nicer varieties, and those grown from tiny seed which require so much care and cultivation. But they can have some hardy plants, such as the different varieties of lillies, crysanthemums, and many other plants. Then, by adding dahlias, gladiolus, tube-roses and geraniums, all of which require little or no culture, you may have a quantity of flowers all summer; and if they are not so attractive as some neighbor's plants, they are a pleasure to *you* while at your work.

In all places then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
How akin they are to human things.

And as our flowers and plants flourish for a season and die, does it not remind us of the brevity of our lives? And when we plant the seed and observe how life is brought by death, is it not evidence of our own immortality?

And with child-like credulous affection,
We behold the tender buds expand;
Emblems of our own great resurrection,
Emblems of the bright and better land.

PROTECT THE FOREST.

BY DR. JOHN H. CLARK, MECHANICSBURG, O.

I don't propose a thesis upon practical and scientific forestry; such would be beyond my time and ken. I only aim to call your attention to the past and present destruction of the forests of this country, hoping thereby to gain a pause, and a reflection as to its future outlook.

Compare the present with the time when this country was first opened to the rifle and the ax of the pioneer. The time when a strong arm, a good ax and a trusty rifle, with a love of forest life and a freedom from conventional restraint, were the essentials in this, then the hunter's paradise.

The rapid removal of the forest in almost all parts of the country is obvious. At the time when Pierre Dugan, who was probably the first white settler in what is now Champaign county—and from whom Dugan Prairie took its name—settled in this region, Ohio was one of the most densely wooded States in the Union.

I will not trouble you with an array of dry figures, but will give a few plain facts in accord with statistics. Less than one hundred years ago, it is said that ninety-nine per cent. of the entire territory, within the limits of this State, was in forest.

When Ohio began her eventful career as a State, eighty-nine years ago, more than ninety per cent. of the entire area was unbroken timber. Within the memory of many yet living, seventy-five per cent. or more was in its densely-wooded primeval state. In 1853 the woodlands occupied fifty per cent. of the whole surface, while now it is estimated that about fifteen per cent. only remains in timber.

Thus, approximately, the removal of the forest has gone on at the rate of one per cent. per annum. During the past year thousands of acres of timber have been ruthlessly destroyed.

And truly Ohio's magnificent forest has slowly but surely made way for the plowshare.

In the early settlement of the country the trees, like the Indians, were in the way, and the question was, how to get rid of them? Total extermination seems to have been the conclusion of the whole matter. And if there is any consolation in it, let us remember that our neighboring States are not a whit behind us in the great struggle of forest annihilation. Seriously, if the work goes on at the present rate, ere long there will be no trees to encumber the ground.

In an early day the removal of the forest was essential to make room for the cultivation of the rich soil, but now the wilderness has been changed into an open, as well as fruitful field. There was then a superabundance of timber, but is there now an abundance? Now the question, has not the land-holder gone far enough, if not already too far in the removal of the timber? Is it not quite time to call a halt?

The question of the protection and perpetuation of the forest is certainly one of interest and importance to the farmer of this community, in common with the country at large. And not only the farmer and land-holder but every man, woman and child, and beast as well, are interested in the forest.

It is a delusion and a snare to think of doing without timber. Forest timber is required to furnish material for various manufacturing purposes and industries which can not exist without a generous supply of wood, as in the manufacture of furniture, agricultural implements and in the construction of buildings, railways, etc., and so on; but I need not enumerate, for the fact will not be gainsayed that but little industry can be carried on without wood.

Timber is essential on every farm, not only as a profit, but as a home comfort as well; as a wind-break and shelter for home and field and stock, against the prevailing winds and storms of winter. As an evidence of the patent fact that an abundance of timber will modify the climate, there are many persons ready to bear witness that this country is now much more subject to high, bleak and disagreeable winds even to the blizzard, than a half or even a quarter of a century ago. And it must be conceded that as a country becomes denuded of timber it becomes more and more subject to prolonged and withering drouth and alternata destructive floods; and in time will become barren and unproductive. As an evidence of this go beyond the timber belt, as in New Mexico, Arizona, Wyoming, Colorado, Montana and other regions where there are many million acres of arid, treeless land incapable of successful cultivation without irrigation. Indeed it is well known that the complete removal of the forest in any country of great extent will cause the land to become arid, sterile and unprofitable, and in time barren and worthless. Independent then of the lumber supply, experience as well as reason and science, teaches that forests should bear a certain ratio to open lands in order to make a country productive and desirable. And are we not already over the border of the line of safety? However rich and naturally productive the soil of our Buckeye State, it will cease to be attractive and profitable to the agriculturalist in time unless something is done to stay the wanton wholesale destruction of her timber.

While the extensive dense forest is objectionable, belts and groves judiciously distributed are indispensable. Meteorological changes and phenomenal storms are also modified by an abundance of timber. It is an important factor in preserving the humidity of the atmosphere, giving rise to an increased and more regular rainfall.

We rejoice in the fact that the wealth of this country consists largely in the productive capacity of the soil, but the fatness of the soil can not be perpetuated without moisture, and, as indicated, this in inland regions is influenced by the forest. This statement may be mooted; but in the entire absence of the forest more than a

Melbourne, or a goodly supply of dynamite, will be required to insure an abundance of rain.

Protracted drouths are the exception in a timbered country, but the rule in an extensive open country. The woodless regions are the rainless regions the world over. In other words, landscape beauty, health, wealth and comfort can not be maintained in any country long without twenty per cent. is retained in well distributed forest. Countenance is being given to these facts by all civilized nations.

It is estimated by those who have given the subject careful thought, that twenty-five per cent. of the whole surface area should be in forest; whereas, as before stated, it is estimated that Ohio has to-day but fifteen per cent. and much of that inferior.

One is liable to be greatly deceived as to the amount and quality of timber in the country. Driving over the country, the landscape view is beautiful to the lover of the forest; the outlook would indicate a great deal of woodland. You see timber in every direction, here and there a grove; as it were, you are circled all around with apparently heavy timber. But how changed the view when you get into the grove and inspect the timber. Often the major part of the good timber has been culled out, the remaining trees, of an inferior quality, stand far apart, barely shading the ground—many unthrifty are already decaying, dying or dead.

Look where you may, over your woodlands, and see the many so called "stag horns," or dead-topped trees, indicating that the bodies will soon be dead also. Give the matter thought and surely you will not entertain a doubt as to the necessity of a move in view of bringing about a reform in the treatment of the remaining forest. And it is a problem for immediate consideration. It should be borne in mind that you can not long preserve a thinned out underbrushed forest. When thus thinned out the remaining trees will soon die for want of sufficient moisture. Then again, quantity and quality of timber go together. As the quantity becomes limited the quality becomes inferior; it will not flourish in small lots.

Not only should there be a cessation of wanton destruction and removal, but there should be reconstruction. As claimed, nearly twenty-five per cent. of the whole surface should be in timber. It is estimated that with less territory in timber, that the supply from the growth of young timber will not keep pace with the necessary consumption of the old. And how many farms are there in this and adjoining counties without, or almost without, any timber, and but few have enough.

It is claimed that as the timber is dying out it had better be cut and utilized. True, the dead and dying timber had better be utilized when it can be removed without destroying young and thrifty timber, but then there should be replanting going on. All thinned out and open spaces in the woodland should be replanted. And a great deal of the bare hill land and other portions with soil too thin for remunerative cultivation may be successfully planted and in time made profitable.

It is a grave mistake to depend upon one's neighbor or upon going abroad for timber; the neighbor is likely to be of the same opinion and fail to retain enough for himself.

How often do we hear the expression, "Others may keep woodland; I can not afford it. I need all my land for cultivation." Then again one will say, "I have abundance of timber to last the balance of my life, as I have not many more years on the shore of time at most." How consoling! As much as to say, I care not for those who may follow.

Surely, here is food for serious reflection. Is it true? Care we not for coming posterity? Yes, there is a care.

Every landowner is morally and ethically, if not legally, bound to keep the domain in as good if not better condition than when he found it, as a patrimony for coming generations. The interests of humanity, present and future, demand it. Landed property should not be put upon a level with and treated as personal property.

Furthermore, it is extravagant to say that this or any other extensive country with the requisite 25 per cent. of the whole in timber, rightly distributed, will produce more grain, grasses, fruit and vegetables; or in other words, will support a greater population and more live stock, with a greater surplus for exportation, than with a much less per cent., or none at all, in timber, as bids fair to be the case in Ohio and other States, in a few more decades, judging the future by the present.

Let the destruction of timber go on and in a few generations at most this happy land of ours, like other woodless countries, will become more and more subject to the withering desert simoon; or to the destructive cyclone in its onward sweep. This is no calamity shriek. But, candidly now, is it not time to raise the danger signal? It may take several years yet to entirely sweep this country of the remaining forests, but it will take longer to reforest it. You can not raise a crop of trees as you would a crop of corn. More than an average lifetime is required to grow the trees.

The necessity of forest protection and the importance of the forestry question and movement, is of late realized by many leading agriculturists and others thoughtful of the interest of coming generations. Arboriculture, as an industry, should be advanced. There should be annual planting of the seeds and nuts, and the time is probably not far off when plantations for timber will be the most profitable. It may not be long either until there will be a demand for nurseries for forest trees, and they will be important establishments. But how much better to reserve and protect a sufficient portion of the native forest, so far as now can be.

A proper ratio of timber and the proper care of it, is of vastly more importance than the care of any other product of the soil; this, in view of its slow and expensive production in addition to its commercial value.

Bear in mind the fact that as the supply of timber diminishes, the demand increases with increased population. As the land-holder of this generation protects or destroys the essential timber which the Great Creator planted and caused to grow upon this domain, so will he be justly commended or condemned by coming generations; and surely our selfish cupidity should not tempt us to neglect so great an interest for those who are to come immediately after us.

I reiterate, hoping to emphasize the point, that there should be on every farm provision for constant regeneration and growth of timber to take the place of consumption. Every community should become interested in the matter.

In some of the older States of the East, and also in some of the Western States, trees are successfully cultivated and millions of acres are growing from planting and transplanting.

In this interest we need more legislation, local, State and National. All lands reserved by the owner for the production of timber should be exempt from taxation. In every way more interest should be taken in forestry and forest protection. If properly observed and encouraged, Arbor Day would be an important factor. Children should be interested and taught in the matter. Forestry might, to some extent, be taught in our public schools in connection with botany or other studies.

Groves of timber are not only required for the protection of home, stock and crops, but for sanitary and ornamental purposes as well. How desolate and uninviting a home without trees. Every dwelling should be well surrounded by a variety of forest trees, for health and comfort and beauty as well.

The trees, however, should not be so close to the house as to obstruct the sunlight which is also a health-giving boon. I have alluded to trees as having a sanitary value; but how, it may be asked, do trees promote health? The roots of the trees penetrating and ramifying through the soil, take up and appropriate the results of unhealthy decomposed organic matter from the earth, while the leaves absorb noxious disease-producing gases from the atmosphere—being as it were scavengers

of earth and air. Hence, your trees are health as well as wealth and comfort-producing. By all means protect the forest.

ROADS AND ROAD-MAKING.

OUR ROADS.

BY ABNER L. FRAZER.

The road question has always been an important and interesting one. But as special efforts are being made in some of the Atlantic States, and elsewhere, to awaken a general and popular movement in favor of better roads, it is desirable that Ohio maintain its position in the front ranks, in this, as in other public movements. In public improvements, Ohio has always been enterprising and progressive. Her boldness of undertaking seventy years ago, when the construction of canals was entered upon, was more daring in financial considerations, than has been in any of the great railroads, which cover the State as a net-work. The system of macadam pikes, plank-roads, block-roads, etc, which, at different times have been tried, and which were assisted by State aid, evidence a determination for improvement, which has always characterized our State and people. With our road systems of the past, it is safe to say that Ohio is to-day provided with better roads than a majority of the States, probably than three-quarters of the States; and yet so many of our roads are inferior, and even the best of them are behind the standard of a perfect road. Our best "pikes" or macadamized roads are so infinitely superior to a common dirt-road, that our people seem satisfied with them, and aspire for nothing better; yet, they by no means fill the ideal. In front of my home is one of the best macadam roads in the State; well graded, and kept in average order, by a man who devotes his entire time to the care of four miles of it. But, in winter and spring this road is frequently broken through; it is always more or less rough by the patches of broken stone; and in summer it is uncomfortably dusty or muddy, according to the rainfall. Certainly this is not a perfect road, and yet, people are glad to get on to it, from the soft, muddy and dusty dirt roads. In my county, (Clermont) as in many counties in Ohio, a great deal of money has been spent in constructing public roads; and yet, in a measure, particularly in the Southern, hilly portion of the State, most of this money has been essentially wasted. Certainly the improvement is better than ordinary clay roads; but very few of them have the first requisite of a good road—in careful location with easy grades; and an imperfectly located road with unnecessary steep grades, can never be a proper road, and the money spent in its construction and maintenance, is profigate extravagance and waste. While our statutory road system is defective and should be radically overhauled and recast, yet under the system we have, our roads can be vastly better located and constructed than they are. The law does not require bad locations and steep grades; nor are county commissioners given charge of the roads, in order that they shall, by ignorance or otherwise, waste public money. Exactly the reverse is intended. And we had better stop building roads, until the people and commissioners are taught how to spend their money judiciously and economically, and know what a good road is. The formula is simple: *The easiest possible grade, and the smoothest possible surface.* There are but few places, even in Southern Ohio, where by care-

ful engineering, the maximum grade of roads can be reduced to four or five feet rise in one hundred feet length; and these grades are excusable only where it is impossible, at reasonable cost, to do better. By following ravines and hillsides, grades of one to four feet per hundred length, are generally obtainable. And it is a wonder why county commissioners and engineers, persist in locating roads with grades of ten to fifteen per hundred, which prompts every passer-by, with half a load, to curse their ignorance and extravagance, and to abuse his horse. To be sure, in securing easy grades, a road can not be always located in front of every man's house, or upon the fence lines of every man's farm and fields. There are times when individual convenience, like individual rights, must yield to public good. The location of a road is for the public, more than the individual, and it should be forever. Hence, individual preference and convenience must not stand in the way of public necessity. Individual life is short as compared with that of the public, and he is only one as compared to the many, and he must yield, especially as his buildings, etc., can be readily adjusted to the better road in which he will gain as well as his neighbors. If the people will arise to a knowledge of what constitutes good roads, and to a sensible appreciation of their importance, economy and convenience, there will be little trouble in securing, even under our present laws, a radical improvement in the character and condition of our roads. The first requisite is knowledge, which will lead to intelligent action. I therefore, call upon my fellow farmers, and indeed upon all citizens, to give to this road question, that consideration which its importance demands. There is scarcely a political question which comes so directly home to our every-day life, as the construction of our public roads. It touches our pockets in the wasteful expenditure of our tax money, in the construction of poorly located and illy-planned roads. Hundreds of thousands of dollars are being annually spent in Ohio in the construction of such roads, and some counties are running into debt for such work. Now, in the desire to improve, all this may be commendable, but unfortunately the improvements are not being intelligently made. They are better than what we have had, but the money is being wastefully spent, because we are building upon immatured plans, and consequently the work will sooner or later have to be done over. Many of the roads recently built, and now building, are badly located, too narrow, and otherwise illy-constructed. Let us call a halt upon this bad system; and with more intelligent and greater determination in favor of improvement, begin anew, determined that the money we spend shall be used to the best possible advantage.

The first and most important thing in a road is its location. It is to stand forever, and therefore should be rightly done at the outstart. For this, a thoroughly competent and experienced road engineer should be employed. If necessary to secure such a man, don't begrudge him a liberal salary. Having established the terminal points, let the engineer make the location, with the single instruction to secure the best alignment and the easiest possible grades; and this must be done from a scientific stand-point, untrammelled by individual preference. Don't be impatient because a skillful engineer takes time to minutely search for the best location. Time and money will be least wasted in thorough work. The location of the road having been thus established, the construction can proceed according to the condition of the treasury. But, let me emphasize the absolute, and all important necessity of time and money and skill being taken to secure a perfect location.

Of the importance of grades consider the following facts:—A gentle grade of six to twelve inches, in one hundred feet length, not only secures good surface drainage to the road, but is also easy upon horses, as the force of the load going down hill, or the draught in going up, is reduced to nearly a minimum. On a grade of two and one-fourth feet rise to one hundred feet length, a horse can draw only three-fourths as much as upon a level. On a grade of four feet to the hundred a horse's drawing ability is only one-half as much as on a level; and on ten feet to

the hundred it is only quarter as much as on a level. Hence, the great importance of having the easiest possible grades, even if the first cost should require an apparently large expenditure of money in the location, as well as in the construction of the road. The necessity of attention to this matter is the more urgent from the fact that there are roads in Ohio on which are grades as steep as twelve to fifteen feet, or even more to the hundred feet length. Easy grades are economically essential to every user of a road. If a grade of four feet per hundred requires twice as many horses, and a grade of ten feet per hundred four times as many horses to haul what one horse can haul on a level road, the expensiveness of steep grades, or even of such as we have been accustomed to recognize as admissible grades, is obvious. As a matter of course, even extreme grades can not always be avoided, but they should be as infrequent as the topography of the county engineering skill and money can make them.

So, too, as to smoothness of surface. On a good macadamized road a horse can haul twice as much as on a dirt road; and on an asphalt or brick pavement ten or twelve times as much as on an ordinary clay road. Or the load a single horse can pull on a smooth iron surface will require two horses to draw on an asphalt pavement; five on granite, ten on macadam and twenty on a clay road. The importance and economy of smoothness of surface therefore, claims our utmost attention; and its urgency is increased by the fact that it is possible, by the use of proper materials and work, to have a smooth surface, even where it may be impossible to avoid heavy grades. But when roughness is coupled with steepness, as is too often the case, they are inexcusable in this country of so much intelligence and wealth. Even our best macadam roads are rough and uncomfortable because of loose stones and newly filled ruts which moderate care could in a measure remove. With these objectionable features of most of our roads, it is apparent how extravagant to the public, as well as to individuals, are even the best. The loss of money to the people in horses, wagons, harness and time, in the use of such roads amounts to sufficient in one or two years to relocate, reconstruct and reduce our roads to easy grades and smooth surface; and which in a few years would effect a large reduction in annual taxation. Of all the wastages which the public have a right to complain of, those of our badly-located, illy-constructed and poorly-kept roads are the greatest. The products of the country to be sent to market, and the supplies to be brought out, have to go over the roads even though they be steep and rough; and the steeper the grades and rougher the surface adds to the cost of transportation, in which every producer and consumer is interested. If farmers, teamsters and country merchants were to carefully compute their extra expenses on bad roads, over what they would be if the roads were good, in difference of load, in extra time, in wear and tear of horses, wagons and harness (to say nothing of their temper), they would be astonished at the yearly amount, and would cry out in such tones that politicians, legislators and office-holders would both hear and heed. Nor does this loss and waste end with a single individual or during one year's time; but it falls upon every man, woman and child who uses the road; and during all of the years of its existence. In behalf of economy of money and time, of comfort and health, of thrift and prosperity, of good temper and morals, and of kindness to man and beast, let this protest against badly-located, badly-constructed and badly-kept roads be urged by every man, woman and child in the State, until the needed reform is secured.

The time has come when the necessities of the people require, and the conditions of the country warrant the inauguration of a new policy in road making, which should be upon a broad and liberal basis, and be begun with revision of location and reconstruction. While I believe that our road laws should be radically revised, and that the use of specially-made paving brick in cities is rapidly proving that they will make the best, cheapest and cleanest road surface, I would not wait

for revised legislation, nor for the people to grow into the use of better material than the macadam, which has been so long used. Under our present laws we can have much better roads than we now have, and our county commissioners have ample scope for improvement. In this reformatory and improvement movement the first thing is educational. Our people, legislators and public officers must learn the constituents of good roads, and determine that we shall have them. Until this matter is understood and determined upon, a halt should be called upon further spending of money in constructing new roads. Meantime competent engineers may relocate roads, and whatever is necessary of preliminary work. Public meetings should be held, and farmers' clubs, granges, alliances, etc., should discuss and agitate the subject, and awaken and educate the public. There is scarcely a movement of greater importance than this, and the sooner and more earnestly our people take hold of it the better.

THE PRESENT SYSTEM OF ROAD WORK A FAILURE, AND A REMEDY SUGGESTED.

By S. H. RINEHART, CENTREBURG, O.

To discuss the road question is a difficult matter, as different localities have different kinds of soil, and are placed under different circumstances. Therefore, I will confine my remarks principally to this locality. Centreburg being the principal trading point, we have roads centering at this place, and the nearer we get to town, the more travel there is on these roads; but at the same time, these roads which are traveled so much receive but a very little more work than the roads which have a very small amount of travel. To remedy this, we must have larger districts, so we can draw the work from the less traveled roads to the ones that need it most.

Then, again, another point in favor of large districts is the fact, that the road-graders can be used to better advantage. All the roads should be made smooth by the use of the grader, as early in the season as the condition of the roads will admit; also, the roads that need grading should be graded as soon afterward as possible. The trouble with small districts is, one district does not need the grader but a short time, and the next district is not ready to use it, and the consequence is, this kind of work is not done when it should be.

Now, a word in regard to the manner of grading. Roads should be graded wide enough to let teams pass without danger of filling the ditches, and should all be done at one time. It should be put in proper shape, just full enough in the center to make the water run to the ditches, and then watched closely the whole season, and kept as smooth as possible. Some supervisors have the road graded so narrow and so steep, that I think they lay themselves liable to arrest and fine for cruelty to animals; for it is certainly cruel to try to drive a horse over them, and they will also be about as level the next spring, as they were before they were graded at all. I have now arrived at a point where I expect strong opposition. I would suggest that the road law be so changed, that the road tax can be collected the same as tax for other purposes, and the supervisors be appointed by the township trustees, subject to their dismissal at a very short notice. The term of office, I would fix at three years, provided satisfaction be given.

By having the tax collected in money, the supervisor can employ teams to do the grading (and other work already mentioned), and the same teams can be kept at the same kind of work several days at a time, and therefore be more able to do the work as it becomes accustomed to it, the same as a team on the farm, makes a better plow team after it has been used a few days, than when first used for that purpose;

and besides, the same men and teams can be used for hauling gravel for quite a length of time, and therefore, can prepare wagons for that purpose, and by so doing, can do about double the amount of work in the same time as the average farmer will do with his wagon, poorly equipped (as it generally is).

I claim it is better for the farmer as well as the roads, for when the road work should be done, the farmer should be on his farm preparing the soil for his crops, or planting or cultivating them, washing and shearing sheep, etc.

Under the present system of working the roads, a person can not be compelled to work out the full amount of his road tax, so the supervisor is often compelled to let him work when, and where he pleases, and very often the work is done at the wrong time, and in the wrong place, or is not done at all, and very often is a damage instead of a benefit to the road. Tile drainage is beneficial to the road in wet or spouty places, but I would not recommend it anywhere else.

There should be a law to prohibit all heavy loads from being hauled over the roads when muddy, with a fine of fifty dollars for the first offense, and doubled with each and every offense thereafter. One of the worst pests we have to contend with in this locality, is the baled hay business. These dealers in baled hay ought to be prohibited from hauling hay over the roads when they are not in a fit condition to receive heavy loads. I think it is bad enough to have the hay taken out of the country, let alone the fact that they leave the roads in an extremely outrageous condition.

ROADS AND ROAD-MAKING.

BY J. S. BRIGHAM, TOLEDO, O.

Since mankind constructed society and became distributed over countries, roads have been necessary.

From the time of Moses there have been royal roads: first, the Egyptians, afterwards the Israelites, and then the Greeks called their lines of travel, that were not used for special purposes, royal roads, or the king's highways. Their roads, however, were not the best of the ancients. It was reserved for a commercial city, Carthage, to build the first paved roads. The Romans followed the example of the Carthaginians, and their great highways which connected Rome with its provinces were the most renowned and durable ever constructed.

All over Europe, Asia and Africa wherever their emperors ruled they built roads that have been supposed by the vulgar of different ages to have been of supernatural origin.

Roads may come and roads may go, but Roman roads endure forever.

The Department of State of the United States Government have sent out a circular to our Consuls all over the world making inquiries in regard to the system of road and street construction in use in the countries to which they are accredited.

By the kindness of Hon. J. C. Messer, who furnished me with this consular report to the Secretary of State, I am enabled to gather much valuable information on the subject of road-making.

Geo. C. Zanner, Consul at Liege, Belgium, says: I firmly believe that the great hindrance to the prosperity of the farmer of the United States to-day is the lack of good, substantial state, county and national public roads. I do not think that this proposition can be assailed unless it is to be made stronger than my feeble powers can state it.

Wherever good paved roads have been constructed they have enhanced the value of the farmer's land, and have given increased value to all the products of his

labor. It is a common mistake that the farmer reaps all the benefit from good roads. While it is unquestionably true that the farmer is benefited in a hundred ways by good roads, it must be borne in mind that any thing which benefits the farmer benefits the whole community. Our farmers have to compete with farmers who have the very best facilities for hauling their products to the markets (at a minimum of labor and cost), and to the railways. Highways in Europe enable the farmer to carry immense loads to market with one horse, which our farmer can not do in some instances at all, because the roads are simply impassable. Our farmers can perceive the odds against them when a dog in Europe can draw a load to the market which a horse can not do in the United States.

This is a day of close competition in every thing, and the farmers of our country are realizing this. They have an immense advantage over the European farmers, and have reduced them to the practice of the strictest economy in order to live at all.

With economy and with the advantage of the excellent highways, the European farmers make out an existence, but they have learned by stern necessity that which our farmers must learn for protection. If a highway can be provided by which a farmer can haul an increased load to the market with one horse, that at the present time requires the services of two, with a larger and stronger wagon, and if this can be done in one day instead of three or four, it is as palpable as a proposition can be, that he is benefited just in that proportion.

How much this proportion is against our farmer will be seen when I state that some of our public roads are absolutely impassable at certain seasons of the year, and four horses could not draw a load to our markets that one could easily draw to any market in Europe. The European highways are crowded with pedestrians and bicycles.

This is true, because the condition of the roads invite such exercise. In the Valley of Virginia we have an excellent road; this may be an old acquaintance to some of you. During our civil war army wagons, cannons and the tramp of soldiers which ground into slush a common road, left this highway comparatively uninjured. Farms along this road are worth and can sell for 100 per cent. more than the farms on the ordinary country roads. The farmers are in better condition, and if you were to tell them that you meant to deprive them of their road, there would be consternation among them.

There is nothing more rational to my mind than the movement of the farmers to better conditions that environ them. If they are given good roads, depend upon it half of what they complain of will be removed. If railroads may be compared to the arteries of a living body, then wagon-roads are the veins, and each are equally necessary in quickening and communicating life to the points to which they lead. More than three hundred years before Christ, Romans recognized the necessity of good roads, and they saw this was a subject of the very first importance to them. Historians have looked only to battles and the clash of arms, and great and stirring events in the epochs of nations, and have attributed this cause and that cause as contributing to the nation's welfare; but, in my opinion, nothing was more of a feature in the Roman conquests than the splendid roadways that allowed her troops to be concentrated quickly, and hurled with force on the enemy.

More than one hundred years ago English farmers arose and demanded good roads, and they continued to demand until they got them. There is not a state in Europe but has had good roadways for at least one hundred years. We are then at least one hundred years behind Europe, and about twenty-four hundred years behind Rome in this important matter. There is not a question but that we must have good highways. Our government owes this to the people.

Good roads is the best invitation for people to settle a country, and our enlightenment and civilization demand of us to furnish this means of communication, circulation and exchange of products.

Lord Macaulay attributes the wretched condition of the English highways at the beginning of the eighteenth century as, "due to the state of the law, which compelled each parish to maintain its own roads with statute labor;" as this is the system principally in vogue in the United States, this may also be the reason of our bad roads. But this question of good highways, that the Government through its department of state, is seemingly investigating by this circular, leads me to believe that our government is sensible of the obligation which it owes the farmer, and which our interest and civilization imperatively demand that we should pay them. Don't you think it would be a wise plan for our representatives in congress, to take a part of the money appropriated for cleaning out and deepening unimportant creeks and rivers, and even a part of that used for straight channel purposes, and sundry log-rolling jobs, and construct some good national highways?

There is no doubt but what legislators, both National and State, are considering this matter. It is time for the farmers of the country to make themselves heard, and express their wishes in the premises to their representatives with no uncertain sound. In Europe the government expends immense sums in building and maintaining good roads. In Belgium the principal roads are in the hands of the government—over seventy-nine per cent. or about 4,173 miles. In Italy the ministers of the public works are ahead of the department of public roads. In Bavaria, too, the roads are supported by the State, and here a stringent law is in force against the use of narrow wheel tires—so well does that country appreciate the damage to a road from them. France has 130,000 miles of fine road, for which the government spends about \$18,000 per year, and such care brings its own reward, since the French government knows no more devoted upholder than the farmer. But how, it will be asked; can we have roads and management equal to that of Europe? Simply by insisting that roads shall be constructed and repaired at the expense of the State at large, instead of a tax directed against the farmer alone. In 1888 the report of the Department of Agriculture contained among other things, this statement: "While our railway system has become the most perfect in the world, the common roads of the United States have been neglected, and are inferior to those of any civilized nation."

Adam Smith in his great work on the Wealth of Nations, has, perhaps, more than any other cause, influenced commercial legislation, both in this country and in other lands, by using no uncertain language on the value of public roads, as one of the principal necessities of civilized life and national prosperity. These things are worth being considered by all, and especially the farmer in whose power the reform really lies. It is not my intention in this paper to enter into a minute description of the two or three systems of road building, that are most prevalent in building roads in the United States. You are all more or less familiar with them. My object is to impress upon your minds the need of more paved country roads, and to awaken thought and discussion as to the most feasible plans to obtain them. The two systems most in vogue are known as the macadam and Telford, the former of which is almost entirely supplanting the other. The only particular difference is, in the Telford system a foundation of large stone is laid in the bottom, and the broken stone laid on top. In the macadam system the road bed is graded up to the proper shape, and the broken stone laid right on the soil.

Three requisites may be pointed out as essential for a good system of roads.

First, a system of low grades; second, drainage of the road bed; third, covering with some material that resists the action of wheelage and travel. The loss of tractive power resulting from high grades of our common roads is enormous. The following statement may be regarded as illustrative: A locomotive that will haul

225 tons on a level grade, will haul only seventy tons on a grade of forty feet in the mile, which is less than one foot elevation in 100 feet lineal of track. The same engine will haul only thirty tons on an ascending grade of 100 feet to the mile, and is less than an ascent of two feet in 100 feet of track. The outlay of the tractive power, or the physical strength of a pair of horses, is so nearly similiar to that of a locomotive, that a safe comparison of efficiencies may be drawn upon this statement, so that steep grades on our common roads deprive the owner of teams, a large proportion of their actual value in all services performed in hauling loads, or traveling over our highways.

This bad feature in our roads is one point of advantage the European dog has over the American horse.

The second essential is drainage of the road bed. The great pioneer engineer and builder, Stephenson, was asked: What is the greatest obstacle to a good and permanent railroad track? He replied, water. Well, what is the next important difficulty? Water, was the answer. Well, what is the next? Water. In other words, you must control the water along a railroad track, or you will never have a good one. The force of this illustration must be admitted in regard to our common roads. The drainage of our roads is in many cases a failure; ditches are dug, but no proper outlet is obtained, so the water remains standing in them to permeate and ruin the road bed, and cause malaria and disease.

The third point is the covering for the road. The material for the road must consist of broken stone; flint, granite or whet-stone is by far the best. They should be broken fine enough to go through a two or two and one-half inch ring; the broken stone is then carefully spread over the road to the requisite depth. Right here let me say, that I think great care should be taken by the proper authority to see that the full amount of the right material is put on. I see by the Consular reports of France and Germany, contractors are required to pile up the broken stone by the side of the road where they are to be used, so that it can be inspected and measured before they are allowed to put it on—in this way there is little chance for fraud. The road should have a fall to either side, according to macadam, of one foot in sixty. Many, however, think this to be insufficient. Many of you have noticed, no doubt, that the first mile of Dorr street stone road was too flat when first built; also Oak street pavement not having sufficient fall to carry off the water, thereby causing great injury to the road.

I notice that they make great use of the large steam rollers, weighing from ten to twenty tons; they apply a coating of broken stone of several inches, then roll it, then apply another and roll again, often thoroughly wetting down. A road made of small stone will combine by its own angles, into a smooth surface beyond the attack either of weather or wheels. It is not necessary for me, in this paper, to go into the formula of road-building further. The object is to urge the building, and show the need of more of them. Gravel roads have been in use in Union, Jefferson, Delaware, and other counties in Ohio, for a quarter of a century or more, and have stood the best, and like wine they are improving with age.

Let me give you a comparison of roads. I take from the report of Consul Danforth the following statement:

"One can mount his wagon at the English Channel and drive through the breadth of Europe (except in time of snow), or its length without sinking as deep as the felloes of his wheels in mud in any weather, or at any time of the year. The roads are so firm that rain does not soften them; they are so thick that frost does not break them up. There are no sloughs to wade through, no periods when the factory and the farm are cut off from the rest of the world by an impassable sea of mud. Two horses start with a cart or wagon weighing a ton, having upon it two or more tons, and arrive with no breakage, and at least friction, at their destination."

I clip from the Toledo Blade of December 29, 1891, the following:

VAN WERT, O., December 28.—[Special.]

This is one of the most fertile counties in Ohio, and the crops the last year were the largest ever raised here. The trouble now is that the roads are in such condition that it is impossible for farmers to market their produce. The roads are not piked, and for that reason business is now at a standstill, and thousands of dollars are being lost. The pike question is receiving considerable attention, and many who opposed building pikes, one or two years ago, now favor the enterprise.

The county is in good shape to begin this improvement. Practically it is out of debt; the court house is paid for, and tax inquisitors have brought in enough money to pay for the jail, which is now being built. The large ditches which have cost so many thousands of dollars are paid for, and the farmers are entering upon an era of great prosperity, and begin to feel able to make their very bad roads better.

Would any of us hesitate to be taxed long enough for the roads to be put in condition that we may get to market any day we wish?

In my estimation a horse needs a prepared road-way to perform profitably his service just as a locomotive needs a track to run upon. Now what are the products of Lucas county that need transportation? In the year 1888

Wheat was, of bushels	228 061
Bushels of rye	35,900
" " buckwheat	8,834
" " oats.....	338,045
" " barley.....	14 034
" " corn.....	582,549
" " cloverseed.....	4,622
" " potatoes.....	156 618
" " apples.....	90,186
" " pears.....	2,918
" " cherries.....	305
" " plums.....	21
" " peaches.....	3,036
Pounds " butter	412,966
" " wool.....	26,837
" " grapes	640,269
Gallons " milk	577,294
" " wine.....	25,426
Dozens " eggs.....	298,615
Tons " hay	19,401

Let us examine these figures a little: You can make your own deductions as to what part of the products will be consumed at home; the balance must be hauled to the market. But for convenience in figuring I will take them as stated; the number of bushels taken together; the pounds, gallons, dozens and tons.

Let us say that owing to muddy roads, high grades, rough and uneven surfaces, and not being able to take advantage of the best markets we lose on the bushel three cents; on the pounds, gallons and dozens one cent.

Now, let us see what kind of a fund for road making this would give us. I think it is a low estimate taking the county as a whole. The total number of bushels is 1,425,064; a loss of three cents per bushel would give us \$42,751.92. The whole number of pounds is 1,080,112; a loss of one cent per pound would give us \$10,801.12. The whole number of gallons is 602,420; a loss of one cent per gallon would give \$6,024.20. The number of dozens is 298,618; a loss of one cent per dozen would give \$2,986.18. Tons of hay is 19,401; we will put this at the low estimate of fifty cents per ton, which would give us \$9,700.50, making the total loss the farmers have sustained \$72,263.92. This is saying nothing about the wear and tear of your wagons,

harness and horses, or of your good nature, as well as the loads you wish to haul from town of coal, lumber, fertilizer, etc. This subject commends itself with great force to the mercantile and business interests of the county. Trade will always be dull or brisk, just in proportion to the ease and rapidity of intercourse between dealer and customer. If the farmers are blockaded for half of the time by the roads, the mercantile interests must suffer. A full share of any increase in value resulting from a reform in our road system will inure to the towns.

This community of interest as between the farmer and other business occupations will, when properly understood, secure a cordial co-operation in any line of progress and permanent improvement. There seems to be considerable stirring among the dry bones over this question, as it is shown by the present winter to be such a great necessity. I have tried to show, by the calculations I have made, the loss farmers sustain by bad roads. Are you not willing to be taxed for good macadamized ones? It is an investment that will pay. Take Union county, for instance. They had in 1886 upwards of five hundred miles of paved roads, and have paid out in less than twenty years about one million dollars. Their land along the paved roads has increased fully 100 per cent. in value, and the highest assessment paid in that county was two dollars per acre for farms fronting on the pike, and this was divided into five payments, thus paying forty cents per acre for five years.

By an act of the territorial legislature of Ohio, passed January 16, 1802, the sum of \$544.41 was appropriated to pay for the surveying and laying out of a road from Marietta, leading westward along the dividing ridge between the waters of Wolf creek and Little Hocking, through Athens and Chillicothe to Cincinnati. Although other roads had been previously laid out, this seems to have been the first application, either by the territorial or state legislature of Ohio, of public funds for road making purposes. This road was designed as one link in a commercial route from the seaboard at Alexandria to Cincinnati, while \$544.41 seems to have been the first money appropriated by the State of Ohio for road purposes. Lucas county is making good progress in road making.

There was levied for road purposes—

In 1889.....	\$61,094 72
" 1890.....	92,255 01
" 1891.....	127,437 87

We are proud of this record, but like *Oiver Twist*, we ask for more.

Before closing this paper I wish to urge a better system of keeping the paved roads we already have in repair. It is an old adage: "A stitch in time saves nine."

Take stone road number one in Oregon township for example; it needs a new coating of fine broken stone. In wet weather it cuts up badly, and is getting very rough and uneven. We can not expect to have good paved roads without our taxes being somewhat increased.

Let us work to have the Nation and State assist us in this matter. In all public improvements some are always benefited more than others, and it is the latter class that naturally show the most opposition. But we should always remember that we are Christians, and throw off selfishness, and encourage all that is for the good of our neighbors, thus being as we should always be "charitable."

We hope that all present will think over this, and digest this subject well, and I know you'll then not rest until you have placed Lucas county at the head of the "go-ahead counties" of the great State of Ohio.

COUNTRY LIFE AND INFLUENCES.

COUNTRY vs. CITY.

BY CARRIE M. ELLIS, CRESTVIEW, O.

[Read at Glendale Farmers' Institute, February 10, 1892.]

Ever since I have been old enough to understand, I have heard periodical discussions on the best method of keeping the young folks on the farm.

Those whose whole lives have been spent in the country do not, as a rule, appreciate country advantages at their full value, simply because their advantages are not put before them in their true light.

Every farmer, especially every successful farmer, wonders why his son insists on learning some trade or preparing himself for a profession, when the truth is, the fault, if fault it is, lies at the farmer's own door.

Every young person endowed with average intelligence and ambition, begins life with the praiseworthy desire to make it, so far as he is concerned, a success.

This being the case, you can scarcely expect him to choose for himself a business or profession which, from infancy, he has been accustomed to hear maligned by the one of all others he reveres—his father.

As far back as his memory reaches, he has heard this same father affirm "that farming don't pay—farmers are a down-trodden people—farmers are oppressed with no possible hope of redress," etc.

Is it any wonder that boys wish to leave the farm? Not only do they hear this from the father, but from some of the leading journals, whose columns are filled with complaints of the same tenor. I have before me a clipping headed, "It Makes Me Tired," which reads as follows: "Some one has sent us the following: 'A political orator in Nebraska, a few weeks ago, made a speech in which he referred frequently to the *poor, down-trodden, oppressed farmer*.' Every time he got this off there was a cheer, one farmer especially being so enthusiastic in his applause as to attract attention. A gentleman attracted by the man's demonstration of glee, quietly set out the next day to find out his condition. He ascertained that the farmer homesteaded eighty acres near Lincoln, ten years ago. To-day he owns 6,000 bushels of corn, and other products in proportion; ten head of horses, ninety head of cattle, over 100 hogs and 420 acres of land, to say nothing of a fine line of implements, vehicles and machinery. His total indebtedness is \$800, and he is begging the holder to let him pay the note before it is due. At the lowest estimate he is worth \$27,000 clear. Hundreds of the 'poor down-trodden, oppressed farmers' are in the same fix. Is it any wonder they are disgruntled?"

"This sort of rot," says the editor, "makes us tired. It is not likely there is a word of truth in the statement. It reads like a fish story. But suppose it were true. Did that farmer make all he would have made if every thing had been as it should have been? If unjust conditions deprive him of a single dollar that was his by right, he would have a right to complain. These attempts to show that agriculture is as prosperous as it ought to be, is the fruit of pitiable ignorance, or monumental rascality."

It appears to me that this, from a paper that claims for its object the advancement of agriculture, is not encouraging, to say the least.

Another thing that dissatisfies young people with the farm is the wide-spread, but erroneous idea that the sphere of the agriculturist is limited and requires but little intelligence, and less education.

Do not conclude that this idea is confined to the old "fogies"—such is not the case, I assure you.

Not many miles distant from this village dwells a farmer (not an old fogy by any means), whose education is sufficient to enable him to hold many responsible positions, both political and social.

He is in every way a model farmer, and together with his good wife has raised a model family; and yet I have heard this man most bitterly denounce advanced education for farmers' sons and daughters. In these days that kind of coin is passed by as spurious.

The spirit of the times is for increased intelligence; and an increased intelligence, like an increased crop-yield, can be obtained only by increased tillage—education. An uneducated person has not the capacity to enjoy life that an educated one has. They may be equally satisfied but they are not equally happy.

Do not think that by education I mean that, which to obtain one must spend the greater, or at least the best part of life at school or college.

Go to school if you can, but if you can not, then educate at home. If school advantages be few you can still have before you as large a scope to obtain knowledge as the college graduate has; for books are wonderful educators if read aright. Commit to memory—pass no day without a line, and you will be surprised to see what can be obtained in a year's time. A well-known man in an address to farmers once said, "Do not be content with the bare amount of knowledge necessary to run the farm, but add a fullness—always have in view the object of rising."

Instruction in manners and morals must be acquired at home, and parental teachings will remain long after those of other tutors have passed into oblivion; therefore, it behooves parents to use much care.

Some one has said, "The way some farmers and farmers' wives have of making every thing drudge-work to children has been the means of destroying many a would-be farmer and farmer's wife. A plum pudding forced down our throats against our will would soon cause us to banish plum pudding from our tables. A farmer may be successful in business, yet if he is forever harping on the woes which beset his business, he will soon cause his son to drop farming from his list of desirables. As I said before, one whose whole life has been spent in the country, seldom appreciates country advantages. Only those who have lived cramped up in a large city, with only a few square feet, if any yard at all, can *fully* enjoy the pure air, and the sense of freedom of the country.

No where is the omnipresence of God so evident as in the country. The fields of waving grain, the singing of the joyous birds, the flowers—"beautiful expressions of our Creator's love"—all cause us to feel His nearness.

Just compare, if you can, the difference between the breaking of a spring day in the city, and of the same in the country. Imagine yourself waking in the morning. The first sound that greets your ear will probably be something like this: "Here's your Enquirer, Commercial Gazette! All about the Southern Railroad disaster!! Fifteen lives lost—Paper, Mister?" Mayhap it's the milk wagon rattling over the cobblestones that rouses you. Then sounds are soon followed by the ear-splitting shrieks of the steam whistle, and the clanging bells, the clatter, clatter, clatter on the pavements of many feet hurrying their owners off to work; while, as best it can through your unavoidably smutty windows, a dim, misty, lifeless light is creeping, and you languidly rouse yourself, breathing with difficulty, the air foul with dust and smoke.

Compare that, if you please, with the awakening of the country lads and lassies. Are not the songs of the birds and the lowing of the cattle sweeter to the ear than the harsh sounds that awaken our city friends? The morning bright with the glory of the rising sun, gladdened by the music of the soft breezes, the joyous birds and running brooks—the air sweet with the fragrance of fruits and flowers. Are not these to be preferred to the foul air of the city, thick with dust, smoke and noxious odors? Watch the operations of old Mother Nature—how limitless they are. The most sterile spot grows into loveliness under her hand.

A country boy, with even a faint sense of observation, knows, unconsciously, more of natural history than is possible for one not subject to similiar surroundings. Can the child of the city tell you how the thrush forms its nest of mosses, twigs and clay? Can it tell you the kind of tree or bush this same nest will be hidden in? Oh, no, but it can tell you whether the Louisville Browns or the Cincinnati's won the game at the base ball park; or it can tell where the finest cigarettes are to be obtained. Desirable information, don't you think?

It is a thought common with country people that their city brothers do not have to labor—that they have but to will to achieve.

My friends, this is a mistake; they may not labor with their bodies but do labor with their minds. You and I work hard during the day, but we go to bed, sleep soundly, and awaken refreshed—our labor was of the body-physical. Our friends in the city keep late hours, go to bed brain-tired; their bodies will perhaps rest, but their brains, like Tennyson's brook, "go on forever," till worn out and can go no more. Manual labor is its own reward. It is essential to health that the body keep pace with the mind in activity.

Look at the professor or merchant our boys envy so much. His mind is busy, his body is not; as a result, he has dyspepsia, which makes him miserable, and forces him to abstain from the viands he most craves. He is subject to Bright's disease which causes him the most intense agony; and worse than these he has the "liver complaint," which makes the whole world look wrong, and were such a thing possible, he would doubtless give to our envious country boy all his knowledge, as well as his ills, in exchange for only a portion of his good country health.

We often hear the argument advanced, that in the city one can have better social advantages. Can we? To get into the city is one thing—to get into society, good society, is quite another thing. City society is invariably divided into sets or cliques fully as hide-bound as the caste of India—while in the country, the only dividing line is the one that separates good morals from bad.

Perhaps I ought not to say that our city friends are selfish, but certainly they do not have that "good fellowship" that we in the country experience.

It is not uncommon for a family to live months, perhaps, without making the acquaintance of their next door neighbor, perhaps without knowing his name. People are born, married, and pass out of existence without a passing thought from their neighbor. I recall an episode that illustrates this thought, that happened during our residence in Cincinnati.

My mother was much troubled one morning to see a hearse followed by a line of carriages stop in front of our house. She supposed the street was blocked, but upon inquiry, we found that an old lady living but three doors away had lain ill for weeks, and had died, and was that day to be buried, and we had never heard of it.

Such things may please some persons, but for my part, I prefer to live in a civilized country, where neighbors will not only know if you are ill, but will offer a helping hand.

After all, where do our great men come from? Not one in ten are reared in the city. Ralph Waldo Emerson said, "The men who are the center of activity, the drive-wheels of trade, politics and industrial arts; the women of beauty and genius, are all the children and grand-children of farmers." He also tells us that "they are

wasting in dissipation, the energies acquired by their fathers in their quiet but active lives." Our grange ritual tells truly, "that in the beginning God made agriculture honorable." Is not that enough to those so eager to leave the home nest, and to mingle with the busy throng of the city? I can only say, look well before you leap.

True happiness to no one place confined,
But still is found in a contented mind.
How can'st thou renounce the boundless store
Of charms which Nature to her votary yields,
The warbling wood and the resounding shore,
The pomp of groves and garbure of fields;
All that the genial ray of morning yields,
And all that echoes to the song of even,
All that the mountains sheltering bosom shields,
And all the dread magnificence of Heaven,
Oh, how can'st thou renounce and hope to be forgiven.

THE COUNTRY HOME AND ITS INFLUENCE.

By MISS EMMA J. BRANSON, FLUSHING, O.

It has been the opinion, common not only among those who live in our towns and cities, but even among farmers themselves, that the occupation of agriculture in all its branches, was on the whole, less honorable than many of the numerous other callings engaged in by the laboring class of humanity.

Why this has been so, we may in part be able to discern, for we well know that the situation of the ordinary farmer and his family, has not in the past, been what could be desired. But the present aspect and future outlook promise much for them, needing only a wider and more intelligent awakening to their situation, in order to grasp the power and the influence that lies within their reach.

That this awakening is being accomplished in a good degree is evident by the interest manifested every where over our United States, in local clubs, farmers' institutes, and organizations of various kinds, established in the interest of the farmer and agriculture.

All honest labor has a right to be respected; and why should any be more honorable than the intelligent tilling of the soil?

It is the man, and not his occupation that should merit our regard, for we may dignify any labor that it is our duty to perform.

One writer has with enthusiasm remarked, "that the American farmer is the noblest type of man." We would be willing to accept this as a real truth, but however, it is a matter of interest and congratulation to note with what a high degree of intelligence and learning, he discusses all topics both social and political, in our agricultural papers, and elsewhere, causing us to conclude that the American farmer has come to the front, and is highly capable of maintaining his place there among the foremost ranks as moral, public-spirited business men, ever ready to lend an influence in the cause of truth and justice, and in the effort to establish equal rights unto all people throughout our broad land. His high moral principle combined with the talent he can give, would seem a much needed and wholesome factor in the management of our national affairs to-day; where already his influence is being felt, and will continue to be we hope, for the good of all classes, and the advancement of the home. Here nature favors all that is good. Her influence upon her children is naught but pure and elevating. Vice and folly do not come unbidden to its portals, and so it is largely within the power of its builders to make the farmer's home all that it should be—a place of refinement and culture; the truest home of virtue and

happiness, and where the moral, physical and spiritual life alike, may be duly cultivated and perfected. We want such homes; the world needs just such men and women as come out from such homes, and should it not be the effort of every farmer here to-day, to elevate his home life to the highest standard, as well as to seek to improve in methods by which it may be maintained?

If this is the aim, it is a noble one, and an important step toward the attainment of such an end. The saying, "that the homes of a nation are its greatest strongholds," is full of meaning. So, every Christian home must be an important factor in the welfare of our country, and the home-life every where should be a matter of deepest interest, and every available means brought to bear to make it what it should be.

The time has been when the advantages for culture and improvement, especially in the more isolated homes, were indeed limited; but where there is a desire for such to-day, the means are not wanting, and in the quiet of a country home there are superior advantages for accomplishing much, differing from the many interruptions incident to a life in town or city, where modern society makes such demands upon one's time (an advantage it may seem, in the cultivation of one's social nature). Yet, may we not safely question its propriety, when carried so far as to become an interruption to the most valuable quiet seasons, so essential to the true development in all hearts?

Character is no doubt made stronger by due contact with the world. But strong principles and highest virtue are necessary companions. Most business men of to-day would tell us that, to be successful, it takes largely both time and thought, and we know it is true, that the modern successful farmer must give his interests much thought also; but his time is not thus wholly absorbed, and in the appreciation of this fact, lies valuable opportunities, which if improved, would mark an advancement worthy of the effort.

The importance of having intelligent farmers, is no longer a question, and their sons who are receiving good educations here and there, can, in the proper cultivation of the soil, apply their knowledge, perhaps, nowhere more usefully; and we would that these young men might more fully appreciate their peculiar advantages, and rightly value the pure freedom of their goodly heritage, ere it is abandoned for the allurements of a business life. I once heard a young man remark, who had always lived in the city, "that he did not see why the young men in the country could not always be good," situated away from the daily temptations meeting them in city life. So we see much is expected, and our homes should meet the requirements. But temptations will encounter us every where, and a character launching into the world, needs all the influence of an early Christian home-training to develop that high standard of manhood and womanhood to which all should faithfully aspire.

We know that many of our great and good men do often attribute their success in life to the early example and discipline of Christian parents within the environments of a country home; and our quiet homes must continue to supply such men. Here, to the women who find this their sphere in the realization of their high calling, there lies a duty before them scarcely unsurpassed in importance and responsibility, for is it not certain that if her individual duty here, as elsewhere, was rightly accomplished, there would not be the present need for social reformation?

It is with feelings of admiration that we look out upon the busy, earnest workers in the various fields of reform, and learn of the good that is being accomplished as a worthy result of their persistent efforts. But is not this feeling sometimes mingled with a sense of dissatisfaction on the part of some, who may deem their sphere a seemingly narrow one, and, anxious to be doing some good in the world, yet feel that the ties which bind them to family and home are barriers to their usefulness? If this is any where the case, may the delusion soon be dispelled, to be replaced by

the consciousness of opportunities unimproved, and duty overlooked, seeing the possibility within her reach of conferring upon humanity one of the greatest of blessings—a well regulated Christian home—with its unbounded influence, within whose precincts the reformer is not needed, and from out whose portals may go forth young men and women of such integrity and moral worth, that the world in which they are to move will be tenfold the better for her having lived, though oft she may be unconscious of the silent blessing resting upon her labors.

The desire for self-improvement and cultivation of the mind can now be very fully met in the production of good literature, in cheap form, and in the various courses for home culture instituted to suit the requirements not only of our youth but also the busy though aspiring minds of the farmer and his wife.

But do we need physical and mental culture alone, to complete our highest development? The culture of the heart is also most essential to make the full, rounded character, that in its perfect development, stands in the image of its Creator.

COUNTRY LIFE.

A POEM

BY MRS. S. E. COFFMAN, OF DUBLIN, O.

[Published at the request of Plain City Institute.]

What beauty there is in country life!
 In the shining, open fields,
 Where the glorious ground is rich and rife
 With the gifts that nature yields.
 When the sweet hay and waving grain
 Repays the thrifty farmer's care.
 Then, how dear to the eye this lovely plain
 That with fragrance fills the passing air!

Then, in the eve of a summer's day—
 To wander o'er the carpeted ground,
 Where the mowers to a the yellow hay,
 And scatter the perfumed heaps around—
 How sweet to sit at the twilight-hour
 And be fanned by the evening breeze;
 And to list to the birds chant their evening songs
 In the branches of the trees.

And then, as we look to the far-off West,
 At the splendor of the closing day;
 See! the golden light reflects its rays
 On the heaps of new mown hay.
 Now the sturdy farmer takes his rest
 On the cool veranda wide,
 And the little ones, he loves so well,
 Are playing at his side.

His sweet wife sits in her easy chair,
 For her toils of the day have passed,
 And she is as happy as a queen
 Of her lot with a farmer cast—
 Though she must rise at early dawn
 And labor the live-long day;
 But the loving words from him she loves
 Will all her toil repay.

'Tis sweet to labor for those we love,
 And receive kind words of praise;
 And lighten the burdens of the hands
 That toil through the summer days,
 And how sweet to walk through the golden fields
 And drink from the sparkling spring,
 Or sit underneath the spreading tree,
 Where the wild birds love to sing.

And then, when summer fades away,
 And the flowerets go to sleep,
 And the autumn winds come sweeping by,
 'Mid the clouds that gently weep,
 Oh! what joy there is at the fire-side
 Of our quiet country home
 That has gladdened our hearts in days gone by,
 And will gladden those to come.

What beauty there is in country life!
 Oh! what a sacred charm
 Enshrines itself about our homes!
 God bless the dear old farm,
 Where childhood's happy days are spent
 Out in the balmy air,
 And sunlight browns the ruddy face
 Of those we cherish dear.

Oh how we love the sun-browned hands
 That toil from year to year
 To bring the blessings to the homes
 Of those they love so dear.
 These honest hands that are marked with toil
 We will bless them while we live,
 For they're the hands, the loving hands
 That to us comforts give.

And when the autumn's ended,
 And our harvests are gathered home—
 For has not God so often said,
 We will reap what we have sown?
 Then comes a day of prayer and thanks,
 A day of joy and rest,
 And then we bless the loving hands,
 The hands God loves the best.

EDUCATION AND HOME IMPROVEMENT.

A LITTLE THANK-OFFERING.

BY MRS. GEO. MENTZER.

[Read before the Richland County Farmers' Institute, at Bellville, Ohio.]

From the earliest ages of history to the present time we can find, in all the various kinds of offerings that were brought to the altars as a sacrifice, nothing that will express gratitude and cause the human heart to glow with a warmer feeling than the thank-offering, expressing as it does the sincere thanks of hearts overflowing with love for the many blessings we enjoy. So we to-day would bring our thank-offering for the Father's hand that has guided the craft of the common farmer freighted with all his hopes and fears, safely through the storms of doubt, ridicule and privations, and landed him safe in the quiet harbor of the farm home. Only a few decades ago the farmer was so immersed in the every-day routine of labor that he took no time to glance outside at other branches of business, and to see that other trades and professions were leaving him far in the rear; and if, by chance, an illustrated paper found its way into his dwelling he would quite likely find himself portrayed as a perfect specimen of ignorance and stupidity, even to the long ears; and no matter what name he owned the common and accepted name was hayseed. Thus we see ridicule was one of the potent factors that aroused his mind, and stirred his thoughts to look after the cause. Many a man who would care nothing for personal slights, when it came to the idea of the grand old calling that God had placed His seal of approval on—and that calling above all others that he loved and honored—being held up before the world as a target for would-be wits to hurl their shafts of contempt at, then pride and ambition were aroused; he commenced to waken up from his Rip Van Winkle sleep and look about him to see wherein he had erred, and learn how to gather up the broken threads of the web of life, and study the pattern anew.

It is a true maxim that self help is the best help; but truer yet is the thought that God helps those who help themselves. And no sooner did the farmer throw off the shackles of selfishness and stand before the world as a man and brother, than a dozen hands of fellowship and cordial good will were extended to him, and well wishes were expressed for his future. May the new order last as long as time itself. If you will permit me I will turn back the leaves of time for a short twenty-five years, and try to draw a picture of the common farm home as it then existed. There were plenty of rooms, but the sunlight would fade the carpets, and when the transient guest is conducted through the silent and unoccupied rooms to inspect some cherished piece of fancy work or some new purchase, to show how much an article can cost that is not intended for use—we return to the family room. There is a candle or perhaps one lard lamp to chase away the gloom that has settled on our spirits, and turning to the reading table we find one, or at most two, weekly papers to feed a good half-dozen hungry minds; and sadder than all the rest, we mingle our tears with the parents when they tell us that some active, bright boy or girl has left the old home without saying good-bye, because it was so dull and poky there; but if the parent's remorse brings more brightness for the remaining ones of the family, the lesson will not have been in vain.

Now, let us look at a fairer picture in this day of the nineteenth century. The old farm house has wakened up, the bright lights stream out from the windows. We hear the merry sound of music, and clear, young voices join in the song. The honored guest is welcomed in their midst as one of their own. What higher honors could we ask; and on the table we see good books, histories, biographies and travels, and good papers we count by the half score. If there is a vacant chair in this home the absent one carries with him a bright picture of home that can never be effaced. It is right that the fledglings should try their wings, for in no other way can they become self-reliant men and women; but oh, let us look well to this, that they always can feel that home is a good old spot to think about in later years, and the memory will linger with them like the fragrant perfume of withered flowers, when time has silvered their hair and bent their forms with age.

Again, we return our hearty thanks for all the influences that have been instrumental in bringing about this grand change in our home-life, and may the good work go on until every home is reached within the borders of this vast domain of ours. The old lonely life on the farm is gone, and gone forever; to-day the telephone, telegraph and railroad bring the very world to our doors. Our loved ones may be thousands of miles away, but we can hear the welcome sound, all is well, flashed along the wires, and the home-life of yesterday is portrayed as plainly as face to face.

I might almost say book after book has been written in commiseration of the poor farmer and his wife. I have been looking for them and they are gone; the magic wand of the inventor has been the good fairy that has transformed many of the old hard tasks into a work of pleasure. Well-matured places, united with systematic work of hand and brain, has changed the poor farmer into a rich one. Rich in all that makes life desirable, possession of home and friends, meriting the respect and confidence of neighbors, and his fellowmen, and the poor wife—poorer no longer, but standing by her husband's side, rich in all the blessings a good woman craves, her life brightened by his love and care—moving day has no terrors for her—secure in home and happiness.

The charmed circle of social life has opened its doors and smiles a cordial greeting at her approach; that one grand word appreciated, has thrown a brightness around her pathway that time itself can not efface.

Let us refer to the pages of history; see there how often the ladder of fame has rested upon the hearthstone of the farm-house—oftener than in any other class of homes in the nation. Proud we should be of this fact, for fact it is proven by the history of years, that the brightest names in the annals of this country were from the farm-house, and they were the equals of any man, no matter where he came from, or who his ancestors were.

Old mother earth is a generous mother; she responds with full hands in harvest; aye, a hundred fold from her full store-houses products of the seed sown in spring time. The sun never cast its rays on a fairer picture, or brighter prospects for the future, and the rainbow of promise teaches us that as long as the world stands seed-time and harvest shall not fail.

With all these countless blessings we enjoy, the constitutional croaker is abroad in the land. Please do not think his feelings will be hurt; he is not here—he has no time to attend the institute. If you wish to see him, there is no use in going to his farm; he can be found at some loafing place, explaining to some boon companions what excellent policy he would pursue if permitted to hold the reins of government. In his estimation "farmin' don't pay"; he is going to move to town. The neighbors gladly help him move, and he drifts along until the feeble lamp of life expires, a speaking example of do-little, do-nothingness, and wasted opportunities.

His place is filled by some energetic living man, and the worn-out soil revives; the waste places blossom as the rose. The social life of the community has the

added force of the generous, kindly nature, and we rejoice, for we love these farm homes of ours so well, we grieve to see one blot on the fair picture.

Sorrow makes the whole world kin, and our hearts go out in loving sympathy to the homes that have felt the presence of sickness and death, but there is comfort in these words:

Through the faintly glowing sunset
Just beyond the harbor bar,
We can see the white sails glisten
Underneath the evening star,
Coming nearer, nearer, nearer,
Sails into the quiet bay,
Love, her master, casts the anchor,
Every cloud has rolled away.

WHAT A FARMER'S WIFE SHOULD KNOW.

By MRS. HANNAH LONGBON, COLUMBIA CENTRE, O.

There is more demanded of the farmer's wife than of any other woman that must earn her own living. She must have brain, heart and muscle.

The successful farmer's wife should be independent and trustful of her own ability. Self-reliance comes from a cultivated intellect, a well disciplined heart and a sound constitution. With these she is the happiest woman on earth.

Woman's real worth is in her home, and nowhere is practical wisdom better illustrated. Consequently she must first have a thorough knowledge of herself. She must know her power of endurance, her capabilities, her tastes and all her other endowments of nature, and those which she lacks she must cultivate and strengthen by practice.

After this the next most essential thing is an entire knowledge of domestic economy, for the physical and moral health of her household rests upon her to a great extent.

The properties of food and the best method of preparing it is a knowledge every woman should have. No one has mastered the art of cooking who does not know something of the chemistry of food and the purpose they serve in the system. It seems to me that the noblest lesson for womanhood is to know of the waste and supply of the human body and that which builds up the muscle, nerve and brain of her family. Therefore, she must know the chemistry of food. She should know that a person working in the open air, as a farmer, can not exist and work on the diet of a brain worker, but that he needs food of a nitrogenous or muscle-making element—such as vegetables, grain and lean meat—and that he can not do a day's work on the farm on novelties and delicacies, and that her children need a different diet than an adult. Good light-bread is the most essential food on the farm. Pharoah once hung his chief baker, and if the cause thereof was poor bread, I do not wonder at it. The old adage that "Bread is the staff of life," has sound sense in it, if it is good light-bread. But many a farmer's wife deals out stones instead of bread to her family.

She must know how to cook and bake as most conducive to the health of her family, for the first and greatest blessing God bestowed upon us is life; but life without health is almost a burden and a curse. She should understand the laws of hygiene, of the home and farm where they live.

She should be health inspector, if her husband is too busily engaged, or is not capable. In cities and towns one is provided for by the law, which prevents a great amount of sickness. She should understand the chemical analysis of water so as to be

able to ascertain if it is pure or if the barnyard or other refuse is leached into the contents of "the old oaken bucket," which often overflows with poisonous germs.

She should know how to keep the back dooryard respectable, and not a receptacle for everything not in use or which has not found its proper place, for dirt is only matter out of place. The cellar, too, must be cared for by her, or at least inspected by her.

Why should farmers' families in the country, away from the bad vapors of the city, be so subject to malignant diseases? There is far more sickness among farmers than there ought to be. Bad conditioned cellars, small, close sleeping rooms, having the dooryard filled with too much shrubbery so as to obstruct sunlight and the free circulation of air, are some of the agents of disease that the farmer's wife has to battle with. Cleanliness is essential to health and is just as necessary in the country as in the city.

A farmer's wife should understand botany to some extent, also the medicinal qualities of herbs and plants within her reach, for with them she can shorten doctor bills—for many a person lies buried beneath the herb or weed that would have aided nature in restoring him to health and activity.

If she insists on regular eating, pure water, freedom of dress, with plenty of sunlight and pure air, which all farmers have the privilege of enjoying, she will secure for her family that health and happiness which by nature is or ought to be our inheritance.

Dress among the farmers is almost always a secondary matter, and there is too much neglect of personal appearance—and the largest part is among the women; she seems to think dress amounts to nothing, or that she has no time to waste on dress—but here she makes a serious mistake. I think that is one of the reasons that farmers have so many epithets applied to them, and that they must take a back seat on many occasions. In a farmer, possibly, genius might cause slovenly garments to be overlooked; but no genius can make a carelessly attired farmer's wife look respectable. I do not mean that because we can not buy the richest fabric, we must dress out of taste, for taste costs no money, only a little exercise of the brain. Not that she should be governed by fashion, by exposing one member of the body, and piling a heap of cloth on another member, but harmony of cloth and texture, in accordance with her means. She must be able to buy suitable dry goods for the family. Farmers need different clothing than city folks. She must be a general seamstress and dress-maker; do the tailoring for the small boy, and surely know how to patch or mend; ought to know how to trim a hat for a girl, or possibly for herself; know how to raise poultry and calves once in a while, to be sure; know how to harness a horse, and care for one if necessary. I don't know if she should be concerned about the milking or not; if she does, it should only be in case of an emergency, for the house must go at the expense of the milking. Should know that "cleanliness is next to Godliness" in buttermaking, as well as in every thing else; and at what temperature cream rises best, how long it should stand before churning, and at what temperature to churn, and it will save her a great amount of labor. She should use her brain more at butter-making, and she will use her muscle less. She ought to know what crops are planted and reaped, and the amount of labor required in the operation. Should know the income and the expenditure of the farm, and what taxes are paid, that she may not ignorantly waste her husband's product, which means his labor. Ruskin, the English critic, says, "To waste the labor of any man, is to kill him." The policy that she is only his heir, is getting threadbare, for woman has proved that she is just as capable of carrying on business as a man only, he won't give her half a chance. She should understand political economy, and how to sell and buy farm products—in what shape they are most marketable; what products are in greatest demand, and where and when they will bring the highest price. Not that she should rule the farm, but, that she should be capable and understand their affairs. Duties never clash, for "united they stand,

divided they fall." She must practice the motto of "early to bed, and early to rise," which gives her the satisfaction of knowing its divine service, by getting up and earning her breakfast before she eats it.

If there are signs of a farmer losing his farm, some of the first questions that will be asked are, did they rise early? Was his wife economical, or could she waste more with the teaspoon than her husband could earn with the shovel? Were their affairs well regulated? Did she help him in any way? Or did he have to wait on her half the forenoon, and come in early to help get supper in the evening?

A farmer's wife must be vigilant, for "eternal vigilance is the price of liberty" as much on the farm to-day, as it was in the days of Patrick Henry. You know that farmers as a class, are called penurious, stingy etc., and that their wives are stingier than they are.

As a class the farmers come nearer to eating bread in the sweat of their face than any other people. He must work hard in this day of commission men and adulteration, which has a tendency to get him in a rut, and often he does not look beyond. They should guard against this. To provide for others and our own comfort and independence is honorable and greatly to be commended; but that a farmer and his wife should work and slave in all sorts of weather, all their lives, even toward declining years, allowing themselves no pleasure or comfort, shows that they are narrow-souled and miserly. Money is a power with a farmer after a sort; but intelligence, free heartedness and moral virtue are nobler powers.

NECESSITY OF THE FARMERS' LIBRARY.

BY MRS. MARY S. BOHL, WATERTOWN, O.

Time was when a successful struggle for simple existence satisfied the longings of a farmer. To be a good farmer now requires more than mere unenlightened, patient drudgery. The calling demands knowledge, constant study, patient experiment and tireless industry.

The life of humdrum hard work and ignorant farming, has driven many young men to forsake farming for more progressive avocations. This is largely the fault of the father on the farm. His theory too often is, that *mind* will take care of itself—*muscle* is the thing needed. He discards agricultural books and periodicals; the traditions of his fathers are enough for him, and ought to be for his sons and daughters, and thus is muscle fed at the expense of mind. Without scientific books and periodicals there would be no schools, no lawyers, no doctors, no skilled mechanics, and practically no farmers. Strike books from existence and a return of the dark ages is inevitable.

Enterprising and intelligent farmers are always experimenting, and results find their way into agricultural periodicals. They may be of as direct benefit to you as to the experimenter. If profits can be derived from these experiments you may share them without the cost of labor, time and money originally expended, or a knowledge of others' failures may save you from making the same mistakes.

Learned men in other callings have devoted time, talent and money in investigating topics of moneyed interest to the farmer. Could you sweat and toil, contrive, explore and experiment for centuries, your results would fall infinitely short of those already recorded in books other men have written. What man would ever become a successful physician were he to depend for knowledge and skill upon such cases only as came under his personal care and observation. Indeed, could a physician ever become successful under such conditions? Certainly not, any more than

can the farmer who never reads become, in the full sense of the word, a successful farmer.

The physician who reads most knows most; the same is true of all professions and trades. A good agricultural library is as indispensable to the farmer as is the library to the lawyer or doctor.

The very best use you can make of a comparatively small amount of money is to invest it in reliable agricultural books and papers. Let your neighbors call you a "book-farmer" if they will; you will work none the less faithfully and successfully for what you learn in agricultural books and papers. The enhanced value of your farm will be sufficient answer to those who have ridiculed you. Young farmer or old, by all means take your State agricultural paper, and as many more as you can afford. Appropriate a specified amount from each year's earnings for farm books and general literature, then adopt and apply such of their contents as will benefit yourself and family.

LITERATURE.

By M. G. TOWNSEND, HOLGALE, O.

The gates of the twentieth century swing ajar under the golden bow of promise to all classes of people; and that the people of America shall be "destroyed for lack of knowledge" can not be said in this, the last decade of the nineteenth century, for there was never in the history of the world such extensive researches as we find in the literary field to-day; bringing into its arena the most classic, philosophic and scientific scholars of the age; bringing forth such a feast of rich things that the most fastidious can feel they are exquisitely fed. It has not been so very many years since, that the Bible, a meagre amount of history and biographies, and a few newspapers, were the only resources for intelligence. I can remember when the New York Tribune made a special department of foreign intelligence, and it was considered quite an achievement; but to-day we see history, biographies, and almost every phase and condition of life, compared and discussed by its own distinctive and special line of literature. We look upon professorship as almost the acme of civilization, and not a profession exists but what has its own line of literature commanding and using thousands of dollars for its productions. How efficient is the architect of to-day compared with fifty years; yea, half that time, ago. Look at the handsome and palatial residences that beautify our beloved land with the modern improvements and conveniences, complete in all arrangements, and never such artistic skill in the finishing as now. Even the most common day laborer can have his cottage—humble though it may be—built and finished under the most approved plan of the architect, which is indeed a thing of beauty to look upon, giving the owner pleasure and gratification as he enters it to rest and enjoy. Twenty-five years ago the mechanic had but rude forms by which to manufacture his productions. Now, plate after plate, with correct measurements, and instructions are placed before him and with application, beautiful things can be produced. We question sometimes the healthful part of some of the productions, especially the high heels and narrow toes, but watch the improvements on even these lines and you will be brought back to my text that every thing is bettered by having its particular line of instruction. A few years ago, for the teacher in Ohio, The Educational Monthly was the only publication accessible. Now, there are several to aid the teacher in imparting truths on the different branches of knowledge which they are required to teach, and how essential to obtain the best methods. I remember years ago, when under the instruction of the eldest sister of our esteemed friend, Mr. Todd, and later on under a younger sister also, that learning by topic was considered quite a departure from the old

method, and created a deeper interest and inquiry, and in succeeding years, when I was teaching near his home, he being on the board of education, the system of teaching by diagram had just come into use, and which we used to the great satisfaction of ourselves and pupils; and thus improvements follow each other until in comparing the now with the then, it seems that we have almost reached the summit of perfection on nearly all avenues in literature. We rarely enter a home but that we see evidence of literary taste and habit, while, perhaps, it may be somewhat limited in certain localities, but that there is a growing interest and appetite for literature can not be denied, and as the farming population is the meat and marrow of this country, we hail with delight the advancement of the interest manifested in selecting and maintaining a higher degree of literature among that very important class of individuals, and when the farmer insists and persists upon good, pure and clean literature, and plenty of it in his home, we may expect to see civilization advanced in corresponding ratio. Besides the family Bible, which should always take the precedence, the price of a few bushels of grain invested each year in well-selected books, magazines and papers, would soon create a library, the influence of which would have such concentrative and magnetic drawing-power that fewer families would be separated, drifting hither and yon, as their different tastes and temperaments direct, and often for want of the proper knowledge which should have been obtained under parental direction and protection, they are overcome, blinded by outer appearances, without powers of discrimination, and fall to depths of iniquity from which they have no heart to escape, because of no assurance to stand should escape be possible. The farmer's home, it seems to me, should be as broad on every line as the acres to which his home belongs. No more thoroughly should the land be tilled than should the immortal minds residing on the land, and we know the better the tilling the more plenteous and profitable the yielding.

How often a boy showing tastes and tendencies in early childhood to be a mechanic or artisan on some line, has been encouraged by the few tools and pieces of boards that a wise father has provided, perhaps in number very limited, perhaps obtained by self-denial of some long coveted help or improvement on the farm, but seeing the boy's trend of mind wisely let it develop, until, in after years, he has stood beside his boy, grown to be a man, master mechanic of the machinery which he controlled; and, in other cases, furnishing them literature and every thing that will develop them on the lines which they seem to most enjoy and apply themselves. I believe in this way many a heart-ache is saved and many a gray hair is lessened. But you may ask what about the girls and mothers? I had the pleasure once of being storm-bound and obliged to remain a day or two in a family of three sons and three daughters, father and mother, on what the father told me was a poor farm. He said they had to work hard to produce enough to keep the current expenses balanced and pay the taxes, without buying scarcely any agricultural help or improvements; that the farm was given him as his share of his father's estate, and he supposed he should live and die on it. His eldest son had just gotten somewhere a pamphlet on stock-raising and wanted his father to turn the farm into a stock-farm. He said his second son mended the farming utensils on the farm and had repaired tools for the other farmers to take some magazine to which he was ardently attached. The mother, who, by the way, was an excellent cook, said her eldest daughter could not cook potatoes, but from a child was forever sewing and fussing with her cob dolls and a short time before that had learned the dressmaker's trade, and the dry goods part of that house showed there was some one in it that understood the use of needle and tape measure; and literature on different cloths, the texture of which and the use for and all that was needed in her line that could be obtained was gotten her, and to-day she is sole proprietor of a cutting system that is used in all the leading cities in America.

The second girl was the mother's assistant house-keeper, and she and mother had literature for their department. The third boy said all he could do was feed

the pigs; but he didn't like to feed only the short nosed ones, because the book on hogs said they were the best.

To-day, the members of that family that are living are peers in their lines of work. The home circle was never broken till death entered it and when the mother and youngest daughter were called up higher. The sons and remaining daughters said, "Father, you've done all you could for us; we'll never leave you after denying yourself that we might have books and advantages to help us along, and now we will show our appreciation." And so they live, each the complement of the other, rendering to the father godly reverence and deepest affection. And if history, biographies, books and magazines and papers which contain not only the current news, but important questions that are brought before the public mind which relate to the vital interests of our country, and which are ably discussed, supplemented by personal instruction that upon our boys and girls will depend the practical decisions of the people, and therefore they should become well acquainted with them, without forgetting even the very youngest, for Froeble's system of kindergarten work furnishes every thing from the smallest child to young girlhood and boyhood. If such literature could be placed in our farmers' homes, isolated, as many of them are, from society and advantages, I believe fully forty per cent. of our farmers' boys would be contented to stay on the farm until such time as avocations of their choice were engaged in, to their own advantage and the advantage of the world.

We do not recommend, be it remembered, the biography of Jesse James and like characters, and the blood and thunder, dime and nickle, brimstone smelling literature that disgraces many of our news stands and homes of to-day, and neither need these find their way into our homes if fathers and mothers would pre-empt the soil, beginning early with pure literature; but you may ask what would you do if the soil of their minds had been neglected until a taste for such reading had been acquired? I think I would try to purify the news stands, as far as the law would help me, and watch the pockets.

This subject, as it is to-day, is a broad one and not an easy one to regulate; but eternal vigilance will work wonders, and the consequences of impure literature have already proven to the American people that no trouble or labor is too great to guard the youth from its baneful influence, and I am a firm believer in the plain but practical adage, that "As the twig is bent the tree is inclined."

WHAT SHALL OUR YOUNG PEOPLE READ?

BY MISS A. C. ACKLEY, CARROLLTON, O.

Man, in his steady march of progress and civilization, has converted many of the luxuries and accomplishments of life into necessities; and the time is not far remote when reading was an accomplishment to which none but the richest classes of society could lay claim. So rapid, however, has been the intellectual progress within the last century, that it has now become a necessity—one of the senses, so to speak, through which the mind receives impressions from the material and spiritual world, and which enables it to establish relations therewith.

The great question under discussion at present, is not so much how we shall get the young people interested in reading, as *what* they shall read; for every one reads, but *what* he reads determines, to a great extent, the character and strength of his mental and moral faculties. Hence, the great importance of guiding the young mind into a world where it will find nothing weak or vicious, but, on the contrary, will associate with high and ennobling thoughts, that form the foundation of true manhood and womanhood.

Success in life has been defined so often as the accumulation of wealth, or the founding of an illustrious name, that the world has come to accept such a theory as the correct one; but the grand master spirits of the age are trying to destroy this theory and substitute for it the true one. True success in life can only be measured by the usefulness of our lives; the amount of self-sacrifice we have endured for the sake of others; the crushing out of selfishness, and a thoughtful regard for the interest of others, as well as ourselves. Any thing that impresses the mind and heart with this true ideal of success in life, should be encouraged; and is not the reading of good literature, inspired by the great souls, that have struggled to better the condition of man, one of the most potent factors in the formation of such an ideal?

"Have you ever rightly considered," says Lowell, "what the ability to read means? That it is the key which admits us to the whole world of thought and fancy, and imagination? To the company of saint and sage, of the wisest and wittiest, at their wisest and wittiest moment? That it enables us to see with the keenest eyes, hear with the finest ears, and listen to the sweetest voices of all time? More than that—it annihilates time and space for us; it revives for us, without a miracle, the age of wonder, endowing us with the shoes of swiftness, and the cap of darkness, so that we walk invisible like fern-seed, and witness, unharmed, the plague at Athens, or Florence, or London; accompany Caesar on his marches, or look in on Cataline in council with his fellow-conspirators, or Guy Fawkes in the cellar of St. Stephens."

"Books," says Wordsworth, "are a real world;" and he was thinking, doubtless, of such books, as are not merely the triumphs of pure intellect, however supreme, but of those in which intellect infused with the sense of beauty, aims rather to produce delight than conviction.

The words of the wise man are literally true in the present age: "Of the making of books there is no end;" and so vast and so varied has become the mass of reading matter now thrown upon the world, that it requires no small amount of judgment to determine what should be read, and what should not be read. In view of this fact, one of the admonitions of the Scriptures may be very appropriately rendered: "Take heed *what ye read and how ye read*."

To teach our young people how to discriminate between the good and the bad, in this heterogeneous mass, and how to inspire them with a love for the good and the useful, is a subject in which all parents and teachers should be interested.

One can read but a comparatively small number, even of the good books, and there should be no time whatever allowed for those that have not the indorsement of thoughtful, earnest people.

With the great number of newspapers and periodicals now published, there is a tendency to discard books nearly altogether, and read such literature only as is found in these magazines and papers. So far have we swung in this direction that thoughtful people are now calling a halt, for the purpose of considering this question. They find that in their attempts to read all the good periodicals, they have no time left for books. Well, perhaps some will say, what if the books are neglected; do we not find all that we need in these papers and magazines? We think not. Is the average newspaper calculated to give young people an exalted view of life? I think all will agree with me in answering, "No." That some of the papers should be read, all will admit, but to confine their reading to papers and magazines, though of the very highest order, is not enough to bring out the best development of morals or intellect.

We must not forget that the habit of reading has much to do, too, with the cultivation of language—the formation of habits of speech—that we naturally acquire a knowledge of English words and forms of expression from the literature we read.

We once knew a gentleman whose training in grammar and rhetoric had been almost wholly neglected, but he was an elegant conversationalist; an inquiry into

the cause developed the fact that he had been a careful reader of good books, having made "Milton's Paradise Lost" a special study. Is it any wonder that he had a practical knowledge of the art of correct speaking? Some of our periodicals publish the reading matter of our best authors, but what shall we say of our daily papers, for example? We all know that they are too hastily arranged to give us perfect models of English composition. And what shall we do with the old authors—many, many of whom surpass in brilliancy the best of our modern authors?—Shall we read only current literature? No, emphatically, no.

Altogether, the best education that can be attained by any one, is that which comes from personal association with people of great and intelligent souls. It is an education in itself to be permitted to live in the society of some people. However, it is not the lot of many to be placed amid the surroundings of the younger Adams, taught, as he was, by a brilliant father and a gifted mother, and introduced even in boyhood into the society of statesmen and men of letters, but all may place themselves where they may have the companionship of good books—may enter the society of the truly great and good.

Then let us urge the young people to read more books, and only the cream of the papers and magazines. When we see the boys and girls deeply interested in such papers as "The Youth's Companion" and Harper's Young People," we feel that there is a foundation already laid for the reading of good books.

Now, as to the classification of books. There are books that contain much useful information, and are written for that purpose chiefly; there are others that abound in characters of moral heroism and exalted sentiment, and there are others that it would be difficult to classify as to their effect upon the mind and morals of the reader. That depends, to a considerable extent, upon the way in which many of these books are read. If the sole object is amusement, then many books which might prove beneficial in their effects, fail entirely in their object.

Reading solely for amusement, just to kill time, is a dangerous pastime—since it ruins the memory—makes it sieve-like in its action. Something light is easily taken into the mind, and is allowed to escape just as readily. If a book is worth the reading it should be read carefully, and some of it, at least, retained—enough to enable the reader to talk about some of the most impressive features. I sometimes think that the most of us read too much. If we were to read fewer good books, and read them several times, more lasting good would result than from the extensive field which we cover in a desultory way.

The tendency of children to read what they like, many, many times is illustrated in David Copperfield's devotion to the "Crocodile Book," and the frequent calls of our young people for such books as "Robinson Crusoe," or "Little Women." If we could keep more of this tendency in our manhood and womanhood days, our reading would be of far more value to us. "Beware of the man who reads his book ten times," is an old proverb well worthy of our serious reflection.

When we urge the reading of good books, we do not mean to confine the young to those that deal with facts only. We have no right to consider that boys or girls have depraved taste because they do not read with delight such works as Fox's Book of Martyrs, Plutarch's Lives," or even "Bunyan's Pilgrim's Progress"—neither shall we swing to the opposite extreme, and think they should read nothing but light fiction to the neglect of history, biography, etc. The aim of our modern writers of history for young people has been to make their books attractive—to give to them something of the charm that always attends a story, and many of them have succeeded admirably. But if the histories and biographies can not be made interesting to them, let us give them the best works of fiction with the hope that an interest may yet be created in something more substantial.

Right here is the place where the best of judgment on the part of parents and teachers is required, and they can not be too careful, for the amount of trash that is

read by the boys and girls sometimes is astounding. Volume after volume is devoured without the knowledge of the parents, perhaps, and there result from this habits of careless reading—to say nothing of the false ideas of life that are instilled into their minds by such reading. The true test of a work of fiction is the moral that it teaches. If it teaches that the inevitable consequences of sin are remorse and a dwarfing of soul power—that the result of right-doing is peace, that “peace that passeth understanding”—it certainly is a moral teacher. Applying this test, many even of the so-called religious books, written for the boys and girls fail to be moral guides. Why? Because they give false ideas of life. Drummond tells a story to the boys about a boy who found a piece of money and returned it to the owner. On his way home he did not find another piece as a reward, as many would have told it. His reward for right doing was not to be counted in dollars and cents. The whole aim of moral teaching should be the inculcating of the principles of right—to do right, because it is right without hope of reward or fear of punishment.

But if such books as these are hardly worth the reading, what shall we say of the countless number of cheap novels and story papers that find such ready sale? We do not wish to dwell at length upon the injurious effects of such reading matter. We all know their low, vicious tendency. Those who have the charge of the young should see to it that such trash is kept out of young people's sight entirely, if possible; but if the habit of reading such books has been acquired, let us give them something better and help them to see the beauty of good literature. I have seen but few boys and girls who could not appreciate the beauty of Longfellow's “Evangeline,” Scott's “Lady of the Lake,” Tennyson's “Enoch Arden” and kindred works, when they read and discussed them. But we must not forget that it requires skill and judgment on our part, as well as patience, to develop this love for good reading. We must remember, too, that time is an important factor, and we must not expect to see the fruits of our efforts at once. Let us see to it that we ourselves choose our reading matter wisely, and we can the more successfully lead the young into the real world of beauty and imagination of which Lowell so eloquently speaks.

THE EDUCATED FARMER.

By MISS FLORA REED, REED'S MILLS, O.

Although we firmly believe that the only radical means of improvement in the agricultural field is the more perfect education of the farmer—and what we will say will hinge upon this conviction—we are aware that a strong prejudice exists among certain farmers against the higher education of farmer boys. They claim it leads to a distaste for farm life and physical labor, and while this is in many cases true, we think the blame rests not so much with the schools to which they go, and the education they receive, as with the homes they leave. If their life at home has been a ceaseless round of hard labor, with few pleasures and diversions, we can not expect them to come back very willingly from the pleasant associations of school life to the dull, plodding life “down on the farm.” I would that all parents could understand that when they spend money judiciously to improve and adorn the home, when they study to make it attractive to their children and strive to cultivate their home affections, they are in effect paying them a premium to stay at home as much as possible and enjoy it.

We can not expect any sensible person to adopt a profession unless they have been made sensible beforehand that it is the equal, if not the superior, in all that makes life worth living, to any other calling in the land. Once make your children

realize the truth—for it is the truth—that for health and substantial wealth, for rare opportunities, for self-improvement, for long life and real independence farming is the best business in the world, and education, so far from alienating them from the farm, will serve to deepen their interest and develop a greater love for their work.

We will concede that it is possible to farm without an education; but I think if we look around among the farmers of our acquaintance we will find, with but few exceptions, that the most highly educated are the most successful; and all testimony of statistics agrees in showing that educated men of all ranks will do more and better work than ignorant ones—and farmers are no exceptions.

There is no other profession which requires so extended and general an education as farming, for there is very little knowledge that can not in some way be made useful on the farm; but if your time and money are limited—as is the case with most of us—we must exercise a little common sense in our education. We do not need to burden our minds with a load of impractical learning, such as French, Latin, Greek, etc. True science, some one has said, is a thorough knowledge of a man's own business. If a man's business is to be farming, a thorough knowledge of the great principles which govern agriculture should form the foundation of his education, to which he can add whatever embellishments and accomplishments his time will permit and purse justify. There are many here, perhaps, ready to say that book knowledge will not run a farm. No sensible person ever contended that it would. "Practice makes perfect"—practice alone, but a knowledge of principles is the only true and solid foundation of correct practice. Without the slightest knowledge of elementary chemistry a man can not determine, beyond mere conjecture, the character of the soil he tills, what elements it lacks for the production of certain crops, and what elements are necessary to the most perfect development of those crops, etc. Without a good, practical knowledge of mathematics he can not direct the construction of his buildings, compute the capacity of his cribs, mows, etc., or be able to keep accurate accounts of every thing received and paid out, and at the end of the year he does not know whether the value of the produce has been greater or less than the cost of conducting the farm. Uneducated men do not, as a rule, read agricultural papers and books, and attend farmers' institutes; hence, we do not find them using the most improved methods of farming, or see on their farms the best animals and implements. They do not watch the market reports or study the probable home and foreign supply and demand, so they never can determine, with accuracy, when, and for how much it is best to sell. Only the educated farmer understands the full value of that old proverb which teaches to make the "head save the heels," or, in other words, he knows how to make the most profit with the least amount of labor. He brings his farm into good condition by judicious fertilizing and systematic rotation. He provides good fences and necessary gates; furnishes good farm buildings; purchases only the best stock and sells for the best prices, and has a good, comfortable pocket-book at the end of the year.

But the money value of an education is the lowest of its rich rewards—"For a man's life consisteth not in the abundance of the things which he possesseth." It is impossible to estimate what a man gains in position, usefulness and happiness by an education. An intelligent, wide-awake farmer often causes an entire revolution in farm measures and methods among his neighbors. His well-kept farm and attractive home furnish a stimulant to the ignorant, slipshod farmer; and the ill-kept farms and lawns and dilapidated out-buildings are often transformed into order, beauty and profit through the influence of one smart man in the neighborhood, and even the most prejudiced contemner of book-farming is not above asking his opinion and is governed, to some extent, in managing his farm by the advice he receives.

But we should not look upon an education as a means of mere worldly advancement. It is a sacred duty which every one owes to his Creator, who placed us all in this world endowed with minds which we are to cultivate and improve so far as lies in our power; and inasmuch as we neglect it just so much will we miss out of the

great richness and fullness of human life—for it is a law of our nature that the better trained minds we have the higher we rise in the scale of creation.

We have a greater capacity for usefulness and enjoyment, and see and handle so much more of the world. Does it not seem that the farmer, of all men, should be wise, surrounded on all sides by the wonderful works of God with divine wisdom speaking to him through the sunshine and shadow? The softly falling dew and heavy rain, the gentle breeze and rushing tempest, with God's peace in his house and his prosperity in his palace, and that "Happiness which is not bought, and wealth that isn't all in gold, but in simple ways and sweet content; few wants, pure hopes and noble ends, some land to till and a few good friends."

THE EDUCATION OF FARMERS.

BY MISS ANNA FOX, MAXIMO, O.

I have not chosen this subject because I think to do it justice, but rather because it is a question I have felt a great interest in for some time. The subject is never out of season, although it may be stale, and I hope that what I may have to say, will not prove altogether valueless.

The progress of the age demands a higher standard of education for the farming community. One writer says, "we move heaven and earth to educate," and education is the popular theme of the day. While many of our successful farmers have but a limited knowledge of books, you will find them men of active minds, and by skillful management they have made their occupation a success. Here the question arises, how much more satisfactorily might their work have been accomplished had the advantages of a good education been afforded them. They see the situation, are aroused to new zeal, and bend every nerve to educate their families. Nothing will fit them better to appreciate the works of nature and art, to assist in elevating society, and building up for themselves happy homes.

Leaders of agriculture are calling loudly for the intelligent boy, to educate him for the farm. Why don't they say educate all the boys, then there might be more justice in their theory. Farming might then be made a *choice*, and not a necessity. Your neighbor sends his son to college, and unless he has an unusually bright intellect, it is the common remark among educated, (as well as uneducated) people, "he had better keep that boy on the farm; he will never make a scholar of him." Because one child has a more active mind than another, does it follow that you must cultivate these faculties as you find them in your children? Philosophy does not teach it. Nature does not teach it. If the farmer has an unproductive field, he spares no pains in providing for all its needs. He drains it or uses the proper fertilizers, just as the case requires; but if his child does not give promise of a superior mind, he does not think it will pay to give him special advantages. He is a good boy to work, and that is what he needs on a farm. Is there no help for him—no outlook for the future farmer to place himself on an equal footing with his brother in the profession? *Only one*, and that is to educate.

The farmer's son and daughter should come out of the country school, not merely with a given amount of grammar, arithmetic, geography and history, but should have some idea of the fundamental principles of what will probably be his or her life business.

Farmers' sons need a *broad* education than men in most other professions, because the problems connected with their business, are more numerous and intricate, requiring more practical, scientific and social qualifications to insure success. The agricultural college, the agricultural press, the experiment station and practical

farm and field work, furnish the best possible means for a complete education. The use of agricultural papers in the farmer's home, is a valuable aid, as they will bring to it the results of all this work. The education for farmers' boys should be that kind that shall enable them to work out the many problems that now have to be met in our changed agriculture. The common schools should teach more of the primary principles of agriculture. Farmers' boys and girls go to the district school, and get no ideas or instruction that tend to direct their minds toward the soil, the plants, or the animals, they are brought in so close contact with on the farm. We need in our district schools a simple text book on agriculture, and I think we might profit greatly from this plan. I would make no exception to the girls in receiving this kind of instruction, for there are many instances in our country, where women are among the most successful managers of farms, and girls have the same right to receive instruction that shall enable them to seek sources of independent support.

A man may make money at farming; may start with nothing, and die numbering his acres by hundreds, and not be able to read or write. I say he may do so. It is not beyond the range of possibilities. At the same time this is no reason why a farmer should not be educated. And yet the world is as full to-day of pessimists as it was ages ago, who see no good in the present or bad in the past; who believe that the shrewd, clever old gentleman, who has almost outlived his generation, is capable only because he roughed it in a log cabin and fought his way through snow and ice for his three months' winter schooling, forgetting that in this representative one sees only the stalwart conqueror in the pride of victory. The comrades who fell by his side, unable to cope with the fierce battle of life, are laid to rest and tell no tales. We of to-day are coming to know that mature years have plenty occasion for conflict, and that for this our children must be properly trained.

We need to reverse our whole method of life, and instead of making the acquisition of wealth our first care, labor to acquire a well-stored mind, that may be to us a well spring of joy for our refreshment all along the journey of life; to lay up treasures of the heart out of the lives of the home; to live for health and happiness, instead of sacrificing health and happiness to a false idea of life.

When we become as wise as the Spartans—when we give to the raising of children as much care and intelligence as we give to the raising of stock—do not be shocked—remember that the golden age of learning in Greece was preceded by an age of such culture as the world has never since equaled. I repeat that when we become as interested in developing perfect children as we are in developing a perfect breed of horses or cattle, then we may send from our homes sons and daughters on whom a Spartan mother might have looked with pride. Then, farm life will not be far from our ideal of perfection.

Fathers and mothers, whose homes lie clustered around the neat, substantial school-houses which dot our county, how often during the term, or even year, do your footsteps pass over the threshold of that door? And yet your stock are not turned into the back pasture and allowed to remain weeks without you know what food they find there; neither is your hired man sent there to work the season through at what he chooses, without any inspection; and it is safe to say human nature has been found running riot, even among school teachers.

Fathers, when the rainy day comes, instead of passing by to the corner grocery, with its round of gossip and slander, enter the school room and see for yourself whether you are getting your money's worth in return for your school tax. No doubt, at your first appearance, scholars and even teacher will be taken aback, for when did a stranger appear among your flock without frightening both shepherd and sheep; but if you spend a few days in this profitable manner you will soon find a cordial welcome awaiting you. And mothers, do I hear you say, "things are so different from what they were when I went to school?" Then all the more reason you should spend a spare afternoon now and then in the school room. The

best of people desire for their children better advantages than they themselves possessed, and how is this to be accomplished, unless a personal interest is taken in the matter.

Be rejoiced if your child shows an inclination for reading, as he has then a source of amusement for many a stormy day, and a safeguard against a thousand temptations; but cultivate in him a taste for good reading, and ascertain for yourself if he is supplied with a suitable kind, both in school and out.

Oh, fathers and mothers, you who work so hard and deny yourselves so much, do not let the burdens you take upon yourselves rob you of the high destiny that awaits you. Be thankful for the privileges you enjoy, and let all pure influences aid you in developing noble types of manhood and womanhood. Open your minds to every thing that can better your condition. Be proud of your vocation; but remember "it is not the work that honors the man, but the man that honors the work," and dignify your calling by bringing to it the skill of the Master.

OUR LIMITATIONS.

By MRS. O. G. LANE, KENILWORTH, O.

The present is termed an age of progress. It is an era of wonderful achievement. Under its magic touch science robes herself in garments new and old, until she seems an animate creation. Art reaches upward to the Divine and Nature—seen in the light reflected down the aisles of many centuries, can be translated only as "A thought of God." The world seems to have taken on a new life, and to move faster than in the older time. New theories in enticing dress invite to their acceptance; new methods press forward for approval. There are new and wonderful facilities for transmitting thought; new appliances for labor-saving; new schemes for money-making; new inventions of every sort and kind. Old ways are discarded for the modernized almost before tested—too often to find all the good revolutionized out of them—all the bad, many fold, multiplied, but the world smiles serenely over the grave of its failures, and looks expectantly jubilant to the next attempt for assured success. In all this chaotic change and upheaval, the various forces of society have changed front as well, and many which have hitherto played but a minor part are foremost on the stage to-day. The wage-worker, with his banner of many devices, is here; the farmer with his waving fields, the ranchman with his roaming herds, the miner with his pick, the mechanic with his saw and hammer, the vast army of toilers in every walk of life, are here, and lo! *woman* is here also.

This is called woman's hour. There are woman's societies, woman's guilds, woman's councils, woman's conventions, almost without limit. To read of them nearly takes away one's breath. In them she is discussed and dissected, praised and abused, until, if, as Helen Campbell says, "She followed one hundredth part of the rules laid down for her guidance, not one short life, nor *ten*, would suffice for the undertaking;" but the demand which the world makes to-day for women of wide thought and generous culture, of clear mental vision and dauntless spirit, has never, perhaps, been equaled. What is our fitness as wives, mothers, sisters, daughters of the *farmers* of our country to meet this demand? What our equipment and what our limitations? And in the term *farmer*, I do not now include those whose resources permit them to own a "country residence" furnished with all the modern conveniences, which taste may suggest and money supply, but I refer to the average man of average ability and ordinary means, and stern resolve and strict integrity, and true manhood and laudable ambition, who, with his family, is removed from

opportunities of mind-improving and character-building, other than the farm and its surroundings afford, and it is of *such* that the farming community of to-day is chiefly composed.

These are the men upon whom politicians perennially smile, and who, in these recent months, have been so extravagantly lauded and undeservedly censured by the press; the men to whom public philanthropists look to bring up arrears, and whose carefully tilled acres capitalists view approvingly, and open plethoric pocket-books in transfer of them as security for their contents.

It is to the women who preside in the homes of such as *these* that I allude, and of whom I speak. In the majority of these homes the education of both husband and wife is such as the country school has afforded. Upon this they have each built as well and as wisely as circumstance permitted.

With careful frugality and *constant labor* the home has been secured, and the yearly income is made to meet yearly expenditures, with a trifle laid aside, perhaps, for the inevitable losses and misfortunes that come to all; happy, if taxes do not eat into this like a canker worm, and mortgages consume the painfully acquired substance. There is here the ever-present need, not only of careful husbandry of the *dollars*, but also of the *dimes*.

A weekly newspaper or two, a religious periodical, the *Youth's Companion*. (that brightest and purest of papers for the young), and possibly a farm journal or magazine, bring a little freshness from the outside world. A few books on the parlor table, which there is scant time to read, constitute the library, and seldom can the luxuries be permitted.

To her who presides therein the old adage proves true, "Woman's work is never done." In this, at least, there is no limitation, and although she may not—like one of the characters in a story I once read—clean house all the spring and fall, can herself into fruits all summer, and sew herself into the family needs all winter, yet this description, with variations, conveys in many instances, with a deep shading of truth, the history of her life. Household help, except in the most hurried seasons of the year, is impossible, both because of the difficulty of finding it, and the still greater one of paying for it when found.

The care of childhood makes large demands upon her physical strength, and exhausts her nervous force, while chronic ill-health, the result of chronic overwork, is in many instances her constant companion, and she realizes the truth of the words, "The spirit indeed is willing, but the flesh is weak," as applied *not* to a struggle toward a higher spirituality, but to meeting the daily requirements of her household.

Although steam, electricity and machinery are lessening the out-door labor of the farm, it is yet true that the proper administration of the "kingdom which is bounded by four square walls," still taxes to the utmost every resource of her who directs its affairs, and the "what shall we eat," and "wherewithal shall we be clothed," consume the waking, if not the sleeping hours.

While farm-life, from a distance, presents the most ample opportunities for rest and meditation, for the pursuit of natural history and the sciences, yet disappointment will meet upon the threshold the woman who expects to find therein more than scattered moments for culture and development along any line of thought.

She is too *weary* to see the beautiful in the shifting clouds, the starry skies, and the hourly changing panorama of nature all about her; she has no *leisure* to study with artistic eye the wonderful mechanism of plants, and their methods of growth, or, with careful pains-taking, examine the myriad forms of insect life at her feet; neither to trace the "footsteps of God" on rock and stone, nor His handiwork in tree and flower. The glorious dawning of the day is but a reminder of duties awaiting, its quiet closing, of duties unperformed.

In social life there is to her, of necessity, much isolation. Little contact of mind

with mind. Homes are at a distance from each other. Good country roads will only come with the millennium, and electric lights have not yet shed their benign rays over the moonless nights of rural districts.

The long winter evenings grow dull and invite to melancholy; if reading aloud is resorted to as a remedy, it does not always prove efficacious. While Mr. Blank reads enthusiastically the latest speech of that distinguished Senator, Mr. A., on "Protective Tariff;" Sammie, whose boyish mind is hardly equal to this governmental problem, is vainly essaying a problem in "Long Division;" Harry, in a disturbed manner, is trying to follow the adventures of the hero of his latest library book; Jennie is studying the details of a late fashion plate for instruction in designing the dress, which lack of money forbids placing in more skillful hands, while little Johnnie, endowed, by prenatal conditions, with a highly nervous organization, wakens from unrestful slumber; meanwhile, Mrs. Blank silently wonders if protection to its *industries* is more essential to our country than protection to its *boys*.

The father, repressing a sigh as he lays aside the paper, wishes Mrs. B. were more appreciative; while she brushes away the falling tear and wonders he can not be more sympathetic.

Thus, it is not strange that she seeks, by the idle gossip of the hour, to remove her poverty of spirit, until each to-morrow is more empty than to-day.

This, then, is our equipment for the work of life as thrust upon us by the onward trend of the age—limited opportunity, limited strength, limited means, all of which mean *limited achievement*.

How shall we overcome these limitations or, at least, reduce them to a minimum? Tennyson has said, "Man is man and master of his fate." This is hardly true, except on paper. We are what, under Providence, our environments have made us, and only in exceptional instances have these been sundered and all the grand possibilities existing in every nature fully developed. Still much may be done to modify these environments.

I have, myself, indulged in Eutopian visions of co-operative house-keeping as a means of obviating some of the ills to which womankind is subject. But, while a few of the opulent dwellers in towns may avail themselves of this, it is a condition of beatitude which the country farmers' home will never realize, notwithstanding Mr. Bellamy's flowery theories.

One, seeing the *physical* labor required of us says, "Lo, *here* lies the remedy. Slight the ironing, omit deserts, systematize. Another, seeing the *dearth* of soul will say, "Lo, *there* is the healing balm. Leave the work indoors, cultivate flowers, inhale large draughts of air and sunshine; and still another declares that *home-making* is more important than *house-keeping*, therefore make the home bright with artistic design and elaborate finish, wrought by your own hands, forgetting that there *could* be no successful home-making without some degree of efficient house-keeping. Thus, the various methods proposed have become almost as numerous as the points in a circle. The truth is, every woman must be a *law unto herself*. We can not, as some one has said, "fit other people's plans into our own circumstances.

While labor is a God-given privilege, we need to give careful thought that our energies are not misapplied, misdirected, that we do not scatter our forces or waste them on non-essentials. While one of the greatest helps is *plenty of money*, we should carefully understand our financial limit, and be brave enough to allow this limit to modify the modern passion of converting our homes, in appearance, into fancy bazars.

Society rightfully demands a certain conformity to its usages, but we should not sacrifice ourselves upon the altar of fashion, nor fail to remember that the "Life is more than meat and the body more than raiment." Especially should we bear this principle in mind that *we, ourselves*, are of more value to our homes than any thing we

can do for them, and adhere to it with inflexible determination, thus ceasing to sin by working habitually beyond our strength.

In seeking to make our *surroundings* beautiful we should not forget what is more essential—to *make our own lives beautiful*.

Hard-won leisure for physical, mental and moral improvement possesses an added charm *because* hard-won, and though many things desirable are neglected it *should be won*; that the farmer and his household may be esteemed for their intelligence, rather than ignored because of their occupation.

Life is too brief to accomplish *all* we may *wish*; but to make a happy, restful home wherein dwells culture and good will, and from which may radiate all the virtues as well as all the graces, is a worthy ambition for any woman.

The pattern of our lives must unfold from *within*, and no disabilities can equal those found in ourselves, if we allow the better forces of our nature to be vanquished. Whittier truly says, "No man measures in advance his strength with untied circumstances." Whatever our place in life, we *can* make our limitations "stepping stones to higher things" if we are true to the best that in us lies—remembering that the world needs the skillful hand, the brave heart as well as the clear brain, we shall be able to fill well and worthily whatever place of privilege or of duty may lie in our pathway, and shall add still more laurels to the crown that already rests upon the brow of woman.

LOOKING ON THE PRACTICAL SIDE OF LIFE.

By MRS. S. O. EGGERT, MASSILLON, O.

[Read at Stark County Farmers' Institute]

The idea is prevalent, yes, quite current, that when woman takes up her pen it should dip in the finer sensibilities of our natures, or from it should flow the sublime, the ideal or the poetical, just as if there was not woven in the web of life of woman in general the plain, the real, the practical side of life. Allow me a few thoughts from a plain, practical standpoint.

We who meet here, I presume, come principally from the farm homes. We meet as an organization of farmers, that we may exchange ideas, and discuss those topics that will lead to the bettering of our condition and the promotion of our calling, either from a social, intellectual or financial standpoint; and whatever topics discussed, whatever theory advocated, the true merit, the telling results will lie in the practical view—the practical application of the ideas advanced. Life is too short and the progress of the age too rapid for each individual to experiment for his own benefit, or in general to wait for the benefit by his own experiment. If we would keep step with the march of progress we must, in nearly all instances, accept the conclusions already arrived at by our fellow men. And is it not rational, is it not better if you have in advance of me experimented on any principle, or supposed theory, and have demonstrated some theory, or arrived at some satisfactory conclusion or definite results, that I accept your conclusions and results and aim one step farther, than to go over the same ground with probably no different results? And this is why we are here assembled—that each one of us may get the benefit of ideas presented, and profit by the experiments and experience of others; but if we carry not with us to our homes the practical application—the practical side of the question—then will our coming here have been in vain.

The class of farmers we in general meet in these organizations and conventions are what we may term the progressive class, the reading, studying, thinking men and women; those of mental training, mental activity and mental development,

who, while they study the best methods of improving the farm and multiplying its products, at the same time study the best methods of improving and developing the farmer; turning not their whole attention to the accumulation of dollars and cents, but also aiming to secure the means of self-culture, intellectual enjoyment and true happiness.

This idea, then, presents to our minds two classes of farmers; the one going through life on the principle that the farm is of more consequence than the farmer; the other that the farmer is of more consequence than the farm. Do we not see this idea of first the farm, and its improvements, exemplified all around us? That instead of the farmer being first in all relations of life, first in all that which is most and best, first in all that which goes to make life worth living, the farm with its improvements stands first in consideration. First, have fine houses, fine barns, fine stock; improve the farm, and then improve the farmer, and the boys and the girls. First cultivate the fields and probably a time may come when we will give some time to culture in the family. Now I am not advocating that which would lead to neglect or slovenliness on the farm, but presenting that life which is made one of incessant labor, constant toil, a slave to the farm, a slave to dollars and cents—smothering out the higher and nobler endowments of our nature.

Take a look at the home of such an one. A hut by the wayside? Oh no! rather say a stately mansion surrounded by fine barns, filled with well-kept stock. We come to the house; we enter the parlor, nicely furnished. A costly album and a yet more costly bible adorn the center-table, and this for fashion, not for use—no other literature. We come to what in name is the family sitting-room, plainly furnished. A clock, a lamp, and an almanac adorn a bureau, and nothing more. We pass on to the home of the family, the huge kitchen, where all the waking hours are spent that are spent under cover of roof. We look for a book or paper—none. No music, save the clatter of pans, or dash of churn. No charms of home. We take a look at the stock. All are well housed and well fed; so are the boys and the girls, yet they are starving—not for bread and butter—but starving for intellectual food, for that recreation and enjoyment which their circumstances and surroundings should give them; yes, for all that which goes to develop a higher and a better manhood and womanhood.

But we will leave him here with his farm, just where the boys and girls will leave him at as early a day as possible, and go out into the world, and he will sit, and sigh, and wonder why. It is all summed up in these few words: The farm was farmed for all that was in it. All the time, the thought, the labor, the energy, and the strength, were given in exchange for money. Yes, the farm was farmed for all that was in it, and not for the family, the boys and the girls that were on it.

In your imagination take a hasty glance at the other side of the picture, where the farm is farmed as an occupation, to provide a home, in the true sense of the word, for those who are near and dear to us; an abiding place of comfort, happiness and enjoyment; of intellectual enjoyment, the highest enjoyment of which mankind is susceptible. It was Barton who said that "He who leaves an intelligent, well trained family, leaves a legacy to his race and to his nation."

Another thought, and to illustrate it I will say I called on my neighbor, Mrs. John Brown, and I said: Do you expect to attend the institute? She replied, "if you will excuse me I will get my knitting—I have so much to do, and I can knit while I sit here and talk." The knitting brought, the needles flew in and out, and the conversation went on. She said: "John will go; I would like to go, but I can not see how I can take the time. Besides my housework, I have so much sewing and knitting I hardly know how I am to get through with it." "Your family is not as large as mine, I said." "I know, but somehow I never can take the time to go any where." "Why not buy a knitting machine?" I suggested. "That would not pay for the knitting for our family." "Then buy the stockings." "That would cost so

much more." "Then why not hire it done?" "Oh, I think I can get through with it, and it still saves a little." "Does John have a clover-huller, fodder-cutting machine, or corn-drill?" "No, he hires a machine to do such work." "Does it not cost more?" "Yes, but he thinks he can make it up in some other way." "Now Mary, can not you apply this same rule to *your* part of the housekeeping, and so manage to make up in some other way, and not go on spending every waking moment in manual labor, go plodding along in the old ways with few, if any of the conveniences or inventions of the day for the saving of time and labor, never stopping to take one moment for rest or recreation?" Now, in general, I would not attribute such cases strictly to economy, or the want of means. I knew a lady who generally did the washing for the family, and a right good-sized family it was, and she had neither a washing machine or a clothes-wringer, that great labor-saving machine; yet she wore an eighteen-dollar cloak, and I presume a three, four or five-dollar bonnet.

What would you think of a farmer who would spend every moment of spare time, all this winter through, in cutting up the fodder for his stock, with his pen-knife? You may answer. Along the same line of reasoning, what do you think of his wife who spends every moment of time, this whole winter through, knitting with fingers and needles? You may answer.

The lesson is this: Man in general looks on the practical side of the question, takes a practical view of the situation, takes advantage of the progress and inventions of the age, while woman plods along in the old ways, toiling away every moment of her life, as if every moment must be made a moment of toil, as if that was the purpose of her existence here, as if the saving of a dollar or cent was the acme of human happiness.

I could not consider such a state of affairs, where it in reality does exist, as the fault of the husband alone; no, not at all, but rather to the force of habit, or the indifference on the part of the woman to take a studied, practical view of the economy of time and labor, a practical view of the practical side of life and of living.

I am led to believe, that the life of woman in the farm home, needs not necessarily be one of such isolation, such drudgery, with no time for rest or recreation, as some seem to suppose. I speak from experience. Years ago I went plodding along in the old ways common to the farmer's wife, but by and by a wave of thought struck my mind, set me to thinking, and the result was, a whole ocean of thought came up before me, sweeping the old ways out of existence, and better planning, better methods, better management, took their place, and to-day I do more manual labor, more mental labor, with more time for rest and recreation. I do not presume that I am favorably situated; far from it. Or that I know nothing of the real work on the farm. I know all about it. I come from the farm home. I work as hard as any of you, probably a little harder the past few days, that I might be here to enjoy with you this intellectual feast, knowing full well I would be amply repaid, carrying home with me new thoughts, new ideas, higher aims, and nobler purposes.

But back to the thought of isolation, drudgery, rest and recreation. It is evident to my mind that much of this undesirable state of affairs which is so often portrayed to us, is the fault of woman herself. That she in general does not make a study of domestic economy, does not master the economic problems of house-keeping, does not study the judicious management of time and labor, does not apply that management which should bring to her rest and leisure, and that she does not avail herself of the advancement offered her by the progress, and inventions of the day. Her duty to herself, her family, and the human race demands a fair share of her time for mental culture, for rest and recreation. Her own physical and mental well-being demands it, the welfare of her family demands it, the heritage of her offspring demands it.

Along this line of reasoning comes before us that old, old maxim so replete with truth, that "the hand that rocks the cradle rules the world," which, being inter-

preted, means that the mothers, in a very great measure, mold the character and shape the intellect of each rising generation, so that when it reaches manhood and womanhood, the teachings and principles implanted in the youthful mind, with which the mothers have had so much to do, will, in a great measure, shape the destinies of a nation.

If, then, the influence of the mother is so powerful, so enduring, what must be her duty, not only to herself, but to the human race? It is not only to care for the physical man that the mortal life may be sustained, but at the same time to give proper attention to the cultivation and development of the mental faculties. In this matter so many offer, as an excuse, the want of time. It is not so much a matter of time as of the judicious use we make of each passing moment.

Once a lady, the mistress of her own housekeeping, complaining of the demands it made upon her time, held up a piece of lace about half a yard long. "A very difficult pattern," she said, "and that she had given all her spare time to it for the last three weeks." Why, I thought, she might have bought fully that much, probably answering the same purpose, from some Jew peddler, for about ten cents. How much better had she spent that time in knitting into her mind some of the good and noble thoughts of our best speakers and writers of the day, not only with good to herself, but, no doubt, to her children.

And now, wives and daughters of the farm-home, the practical side of the question is this: That we take a studied, practical view of life and of living; study the economy of time and labor as well as finance; study the management of our domestic cares, so as to give a fair share of time for rest and recreation; pass over the perishable and trivial things of life, and aim to secure the means of self-culture; educate ourselves to a higher standard, aspire to higher ambitions, higher aims, nobler purposes; so cultivate the higher and nobler faculties with which we are endowed, that they may be subservient to our own good and well-being, and to that of our homes, our families, and our fellowman; lend a helping hand whenever and wherever we can to the elevation of our calling, and the ennobling of those who pursue it.

SPECIMEN CHIPS THROWN OFF DURING WOMAN'S HOUR.

[Papers read at Quaker City Farmers' Institute]

BY MRS. JENNIE COX.

In contemplating a paper for this occasion, I was made to realize very forcibly the saying of Solomon: "There is nothing new under the sun and what has been is now." But when the programme came out I was somewhat relieved, for it tells us that woman talks. It is proverbial that woman does a great deal of talking; notwithstanding this, she is oftener accused of keeping very near the shore. That her conversation never reaches beyond the common affairs of life. Is this true? Not absolutely. Still there is perhaps more truth in the accusation than we are willing to admit. If this be true can we assign any reason for it? One very potent reason for this state of affairs is, that so many of us entirely abandon all intellectual pursuits and drop down into an aimless life as soon as our school days are over.

Some of course are ambitious, and will at once enter upon a course of study that will constantly develop the mental faculties. But for the majority, if they can do housework and sew and do a little fancy work, and so adorn themselves that they can appear well in society, they are content to let that fill up the measure of their existence. We imitate too much. We do what we see others doing, without stopping to think of the principles which underlie all our operation. There are scores, yes, thousands, yea, millions of human beings who are not worthy the name of man. The following words of the poet do not apply to such:

"On earth there is nothing great but man.
In man there is nothing great but mind."

Can man in general attain to such greatness? Certainly he can by a proper education of all his powers. Learning will dignify the lowliest toil. A good education is every where a passport to good society. It always dignifies the laborer and makes freemen of slaves. Franklin could wheel home his paper through the streets and set his type. Hugh Miller could work in a stone quarry, and neither lost the esteem of any man whose esteem was worth possessing.

Education has a tendency to make persons feel that their special work is to think and plan and manage. It does not make them any less industrious, but it disposes them to make use of all the means that God has placed within their reach in order to bring about great and noble results.

We live in an age of progress, of enlightened thought, of scientific research and discovery. Every branch of science has made marvelous advancement in the last twenty years, and new and wonderful inventions and discoveries are daily awarding patient investigation and study. The time was when the farmer sowed his seed in a haphazard way without any thought of the adaptation of the soil to the seed. But education stepped in and said, "Base your operations on scientific principles, and these principles will enable you to apply the means by which the results required can be obtained." If he wishes to increase the fertility of his soil, chemistry points to the means.

As well might an engineer propose to locate a railroad or navigate a ship without a knowledge of mathematics as for a farmer to successfully raise crops year after year without some knowledge of the adaptation of different kind of seed to his soil and the means by which he can bring his soil into that condition that it will produce the crops required. The time was when he plowed his ground with a wooden plow, when he cut wheat with a sickle, when he mowed his grass with a scythe, when he threshed his grain with a flail or stamped it out with horses. Education stepped in and caused men to think, and plan and invent, and to-day, the farmer on the western prairie can be seen plowing his ground after the most approved style while seated upon his engine guiding its operations; so, too, in reaping and binding and threshing his grain. He has put his education into practice and he has his reward by the favor of God in bountiful crops and well filled granaries.

Shall we, the wives and mothers and sisters of such fall in the rear and let the men outstrip us in putting into practice the education we have acquired? No, we should not. What then can be done to correct our desultory, haphazard way of doing things? The men have their agricultural meetings, their reading circles where they are at liberty to discuss every phase of agriculture, stock raising, poultry raising, and they even discuss the art of butter making; and they are liable to take it out of the hands of the women because they claim that women will not learn to make butter according to scientific principles. They claim that she will stick to the good old way that her mother taught her. She wants to imitate rather than experiment. Of course they make the plea too that woman does not have the physical strength to make butter on as large a scale as they do at the creameries.

If farmers have been benefited by the above named societies, why can not the women be benefited by forming societies where mind will come in contact with mind, discuss all phases of house work, and all those other operations of art? Do you class the work that devolves upon every woman who has the oversight of a home among the arts? Certainly, all the practical affairs of life, the work of the farmer, the merchant, the mechanic, the physician, the teacher, the judge, the artist, the musician, the housewife, the nurse, all things that conduce to the comforts of life are included in the arts, because they grow out of our necessities. Another means which would be of practical value in making us more earnest and thoughtful, and making us use our judgment and form our own opinions, would be a well selected

course of reading. Most of us do read a little, but we do not read that class of literature which we wish to retain, and consequently we fall into slovenly and careless habits of thought and expression. We should read something that we desire to remember, something that contains facts, something that will inspire us to higher aims and nobler purposes in life, something that will lift us up from a low plane of drudgery to a plane where all labor is a delight. Reading with a definite aim is always productive of better results than simply reading to pass away the time. We should so read as to master the ideas and arguments of the authors. This can not be done by merely reading a book once; the reading must be persistent, and in time a gain will be perceptible in the breadth and exactness of our information and in the quality of our mind. Our mental faculties will be more alert and active. Our reasoning powers will have developed and we be able to concentrate our attention upon any subject that may be discussed in our presence. Many women in the higher walks of life, so to speak, are constantly working upon the plan above mentioned, and their achievements are wonderful.

In the International Council of Women, held in Washington City in 1890, every avenue of work and education was ably discussed by women, and much enthusiasm was created which went out over our land, and over foreign lands, like a great tidal wave, and still it is going on and its influence is being felt by thousands. Let women in the humbler walks of life so act that the following words of the wise man can be applied to them: "Give her of the fruit of her hands, and her own works praise her in the gates."

"WOMAN'S WORK;" BY MRS. CHARLES HENDERSON.

The president of the institute has asked me to write something for the ladies' hour. He says it is not to be a political speech, or a lecture to the men, but something about woman's duties, cares and responsibilities. Now, I can't just understand this. In his introduction he has withdrawn any limitations either of time or subject. I think it unkind and unfair for the men not to give the ladies an opportunity to lecture them once in a great while, when we have to listen to them so much. I think they might allow us to lecture them sometimes, and then, if we get too pointed or plain, it would be time to notify us that the lecture field was not in our sphere; and when they do this we will then consult about starting an institute of our own. I suppose they will object next to certain lectures. Then the next thing will be to tie our tongues, and then what next? Well, when they will not allow us to use our tongues when we please, then I am in favor of organizing a strike, and let them do the washing, ironing, baking, can the fruit, make the butter, mend the clothing, amuse the children, and do the thousand and one other things a woman has to do when she is looking to the ways of her household. When this condition of things has lasted about three weeks or three days, or perhaps three hours will be sufficient, the strike will be ended in our favor; and when time for the next institute comes around we will be allowed to select our own subject and write just about what we please.

The cares of a woman, with one or more children, are many, and such a woman is very closely confined to the house, and loses her interest in what is going on around her in the world. This is a part of life I do not like. Besides, this close confinement in the house, is very hard on our health. We need to be out in the pure air as much as our husbands and brothers, and need the exercise for the development of our muscles as much as they do. For my part I want to be in the fresh air every day to get health and vitality to perform my duties as a wife and mother should. I think it my duty as well as a pleasure to assist my husband in every way I can to get a home for ourselves and children, and to have something to give the poor and destitute.

There are many ways on the farm a wife can help her husband. She can plant the garden when the ground is made ready, keep the vegetables clear of weeds, and various other pieces of light work. She can make a large part of the household expenses out of butter and poultry. And when we do this we get double pay, pay in health and vigor, and pay in the consciousness that we are helping to make a living. And if it is necessary, we can drive up the cows, catch a horse, bridle and saddle him, or harness and hitch him up, and drive our produce to market, saving our tired or absent husbands a trip, beside having a little recreation ourselves. No kind of honest labor is unlady-like or degrading, and when we help all we can we only add to the dignity of womanhood.

If my lady friends want a receipt for rosy cheeks, good complexion and merry hearts, which I am sure they do, they will find it in the work I have referred to as belonging to our sex. Now, sisters, if we can not lecture the gentlemen at the institute, we can control them just the same if we go about it in the right manner. They have a cold, hard world to battle with, and it is no wonder if they come home cross and wearied. But I will give you a remedy for cases of this kind. Have a gentle word, and kiss him by all means, then watch him thawing out and getting pleasant, and by the time he has finished his meal you will feel safe to strike him for a new dress or hat, or any thing else within his means. Wives, let us not be "clinging vines to drag down the sturdy oak. But let us train the sweet vines of womanhood in such a way that they will help bear the burden of our loved ones."

MRS. W. N. COWDEN'S PAPER.

When requested to write something for the "woman's hour" of this institute, I thought first that I could not comply with the request. For it had been so long since I attempted to compose any thing more than an occasional letter, that I felt my intellectual machinery was so rusted and out of order that I would certainly fail in the attempt. I suppose my experience is much the same as that of many a sister, and this thought I will make the subject of my five minutes' talk.

The mind is kept constantly changing from one subject to another, and seldom allowed to dwell on any one for any considerable time. I think it is not to be wondered at if the mind loses its capability to follow a subject with the same ease and grace as others who make study the daily habit of their lives, and I think no one feels the truth of this so much as mothers and those who have the care of little children. They seldom enjoy the luxury of thinking their own thoughts, but are kept almost constantly answering questions and performing little services and teaching little lessons, and may be administering little corrections, and so our time goes in. But this was not always my experience. I commenced my life in a home where we had plenty of books and papers and music, and school, all of which I used until I became a teacher, and then my knowledge of books took a wider and more practical turn.

Then I assumed the duties of a house, then of a family, and books, papers and music all had to be in a great measure neglected. Is it really necessary that household and home duties should so engross our time and attention that the mind, the best part of us and the immortal part, too, should rust and decay, and its possessor become at last incompetent to perform the simplest intellectual duty or labors? Now I believe "where there is a will there is a way" and that if we would determine that so much time should be given every day to reading and study, all else will soon conform to the arrangement, and we not miss the time taken from other things. Then when our duties are more pressing and exacting than ordinary, we can get our child-rep or some one else of the family to read aloud, and in this way keep up with the times. Keeping up with the times now means a good deal, for the world is moving very fast and events are succeeding each other in rapid succession.

Then we have one day in seven given to us for our intellectual and moral improvement, and this day we can spend in the culture of our minds. If we spend this day in idleness or feasting we are not only robbing God, but we are robbing ourselves of the time our Creator has given us for the promotion of our highest intellectual and spiritual good. A good rule for a wife, if her husband invites company for dinner on Sabbath, is to just let him do the cooking and set the table and wash the dishes, etc., and after he has tried it about once you will have no more trouble in that direction. The probability is that before he has gotten dinner he will promise you if you get the dinner that he will take you sleighing, or get you a new hat, or send you off on a visit among relatives or school mates, and then you will have time to rest from household cares, and wear the rust off your mind and get some polish by intercourse such as your gentlemen friends are constantly getting from each other. "As iron sharpeneth iron so doth a woman the face of her friend." If that is not exactly the way Solomon wrote it I think he might truthfully have written it that way. I suppose Solomon did not write it my way, because his hundred wives made it self-evident to him that iron sharpeneth iron. As we need this social intercourse just as much as the other sex, if we don't get it it is partly our own fault, and partly due to our environment. But we largely make environments, and let us so make them hereafter that we will have more time for intellectual and social improvement. Some of the sisters believe the ballot in our hands would be a cure for these and other troubles of our sex. It seems to me this would only increase our duties and responsibilities. Just imagine you see Sister Hill and I elbowing our way through a crowd of men on our way to the ballot-box. For my part I am thoroughly satisfied with the opportunity of voting now within my control. That is through my husband and the boys, which comes within one of being a half dozen votes, and that is four more votes than any man gets. I think any woman might be satisfied to be the "power behind the throne" in this way, and it is a much surer way than the plan of Susan B. Anthony. It is not more power we want (we rule the world now, as all observing men must know), but a better use of our power. Instead of wasting our time and talents on novels and gossiping, let us spend them in useful, helpful ministries to those in need, and employ them for the upbuilding and elevating of the race.

APPENDIX.

TENTH ANNUAL REPORT
OF THE
OHIO AGRICULTURAL
EXPERIMENT STATION,
FOR 1891.

PRINTED BY ORDER OF THE STATE LEGISLATURE.

i A. Appendix

ORGANIZATION

OF THE

OHIO AGRICULTURAL EXPERIMENT STATION.

BOARD OF CONTROL

SETH H. ELLIS,	Springboro.
HON JOSEPH H. BRIGHAM,	Delta.
R. H. WARDER,	North Bend.
THE GOVERNOR OF THE STATE,	}
THE DIRECTOR OF THE STATION,	} <i>Ex-Officio.</i>

OFFICERS OF THE BOARD.

SETH H. ELLIS,	President.
PROF. WILLIAM R. LAZENBY,	Secretary.
BERTHA E. WILDMAN,	Treasurer.

STATION STAFF.

CHARLES E. THORNE,	Director.
WILLIAM J. GREEN,	Horticulturist and Vice-Director.
J. FREMONT HICKMAN, M. A. S.,	Agriculturist.
FRANCIS M. WEBSTER,*	Consulting Entomologist.
BERTHA E. WILDMAN,	Bursar.
FREDA DETMERS, M. SC.,	Botanist.
EDWIN C. GREEN,	Foreman of the Gardens.
W. H. BAKER,	Meteorologist.

* Prof. Webster is special agent of the U. S. Department of Agriculture, Division of Entomology, and is located at this Station.

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REPORT OF THE SECRETARY OF THE BOARD OF CONTROL.

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REPORT OF THE AGRICULTURIST.

REPORT OF THE HORTICULTURIST.

REPORT OF THE ENTOMOLOGIST.

REPORT OF THE BOTANIST.

REPORT OF THE METEOROLOGIST.

APPENDIX—THE BULLETIN FOR 1891.

Tenth Annual Report.

REPORT OF THE BOARD OF CONTROL.

TO HON. WILLIAM MCKINLEY, JR., *Governor of Ohio*:

SIR: The Board of Control of the Ohio Agricultural Experiment Station submits herewith the annual reports of the Director and other officers for the year ending December 31, 1891.

The past year has been an eventful one in the history of the Station. In the last annual report were given reasons for believing that the time had come for considering the subject of the ultimate removal of the Station to a more eligible location.

At the request of the Board of Control the General Assembly passed an act providing for such removal, and authorizing the several counties of the State to raise money to secure the location of the Station.

The full text of the act is as follows:

AN ACT

TO AUTHORIZE THE SEVERAL COUNTIES OF THE STATE TO RAISE MONEY TO SECURE THE LOCATION OF THE OHIO AGRICULTURAL EXPERIMENT STATION AND TO PROVIDE FOR SUCH LOCATION.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the commissioners of any county in this state desiring to secure the location of the Ohio agricultural experiment station by making donations therefor, are hereby authorized and empowered to raise money for such donation by tax on all taxable property in such county, as listed on the county duplicate for taxation, the amount of which proposed donation shall be fixed by said commissioners.

SEC. 2. That such tax shall not exceed one mill on the dollar of the taxable property of the county in any one year, nor shall the aggregate of all levies for such purposes exceed ten (10) mills on the dollar.

SEC. 3. * No such tax shall be levied or donation made until the question as to the amount to be donated has first been submitted by the county commissioners to the qualified voters of such county at some special election, a notice of which (specifying the amount to be donated) has been given at least thirty days previous to said election, in one or more newspapers published and in general circulation in the county; which election shall be held at the usual places of holding elections, and conducted in all respects, as far as may be, as other elections, except that the returns shall be made to the county commissioners, at the auditor's office; and those

voting at such election in favor of said tax, shall have written or printed on their ballots the words, "Experiment Station Tax—Yes," and those voting against the same, the words, "Experiment Station Tax—No." And said commissioners shall meet at said auditor's office on the fourth day next after the said election, and canvass the votes; and if it appear that said tax is approved by a majority of the qualified electors voting at such election, then it is hereby made the duty of the county commissioners of said county to levy a special tax on all the taxable property of said county, to raise the sum donated by said vote, in accordance with section two of this act; and the money arising therefrom, when collected, shall be applied to no other purpose but the payment of bonds and interest as hereinafter provided for; and said special tax shall be entered upon the county duplicate, and be collected in like manner as other taxes are collected.

SEC. 4. That to anticipate the collection of the tax authorized by this act, and the use of the money to be raised thereby, the county commissioners, on acceptance of the donation herein contemplated, are hereby authorized and required to issue and negotiate the bonds of such county, in sums of not less than five hundred dollars each, payable (within ten years) at such times, and bearing interest at a rate not exceeding six per cent., payable semi-annually, as the commissioners shall determine, which bonds shall not be sold or donated at less than their par value; and the proceeds thereof shall, on their receipt, be paid by said commissioners to the treasurer of state to the amount of said donation.

SEC. 5. Such funds as may be paid into the state treasury under this act shall be held subject to the duly authenticated requisitions of the board of control of said station, such requisitions to be accompanied with vouchers showing the purposes for which the requisitions are drawn.

SEC. 6. The board of control of said agricultural experiment station shall accept such donation as may in their judgment be most advantageous to the station, and it shall then be their duty to select within the borders of the county, the donation of which is accepted, suitable lands for the use of said station, said lands to be as convenient of access from all parts of said county as may be practicable, and also to be accessible by railroad from all parts of the state. Provided, that any member of the board of control who shall accept or receive, directly or indirectly, any money or property on condition of using his influence in favor of locating said experiment station at any particular place, shall be held to be guilty of a misdemeanor, and on conviction thereof in any court of competent jurisdiction, shall be fined not less than one thousand nor more than ten thousand dollars.

SEC. 7. The board of control shall have power to receive and hold in trust for the use and benefit of the experiment station any grant or devise of land, and any donation or bequest of money or personal property to be applied to the general or special use of the station, as may be directed by the donor.

SEC. 8. The title for all lands for the use of said experiment station shall be made in fee simple to the state of Ohio, with covenants of seizin and warranty, and no title shall be taken to the state for purposes aforesaid until the attorney-general shall be satisfied that the same is free from all defects and incumbrances.

SEC. 9. The attorney-general of the state shall be the legal adviser of said board of control, and he shall institute and prosecute all suits in behalf of the same, and shall receive the same compensation therefor as he is entitled to by law for suits brought in behalf of the asylums of the state.

SEC. 10. This act shall take effect and be in force from and after its passage.

Copies of this act, with a circular explaining some of the benefits to a county which might be expected to follow the location of the Station within its borders, were sent to the Boards of Commissioners of every

county in the State. Within a few weeks offers were received from the Commissioners of Wayne, Clark and Warren counties, proposing to donate \$85,000, \$75,000 and \$40,000, respectively, subject to the approval of the people.

After a careful survey of Wayne and Clark counties, it was decided that the available sites in Wayne county offered a better opportunity for the prosecution and development of the work of the Station than those in Clark. Therefore, the proposal of that county was accepted on the first of September.

The Commissioners immediately issued the required notice of election, and on the sixth of October the election was held. It resulted in a vote of 4,045 in favor of the measure and 1,069 against. The bonds thus authorized were sold on the 16th of December, and the proceeds have been paid into the State Treasury. Since that date the Board of Control has purchased for the Station a tract of land consisting of 452 acres, situated one mile south of the principal street of the city of Wooster. In expending the donation of Wayne county, the Board of Control has conscientiously endeavored to so locate the Station as best to serve the interests of the farmers of that county, as well as those of the State at large.

Upon examination of a map of Wayne county showing its public roads, it will be observed that although the city of Wooster is not located in the geographical center, yet the public roads radiate from it in such a manner as to make it more easily accessible to the county at large than any other locality. Although there is as yet but one railroad in operation through Wooster, it is one of the great trunk lines of the State, intersecting no less than twenty-five other railways. It will thus be seen that no serious difficulty need be experienced in reaching the Station from any part of the State.

The proper equipment of the Station farm will involve a considerable expenditure for buildings, fencing, draining, livestock, implements, etc. A part of this expenditure will be met by the unexpended balance of the Wayne county donation, but this surplus will not be sufficient for the entire equipment. The Station is now being established on a permanent foundation, and a wise economy demands that its buildings should be of a substantial character.

No less than eight American experiment stations have suffered the loss of some of their principal buildings by fire during the past three years. The offices, libraries and museums of an experiment station often contain collections which it is absolutely impossible to duplicate, and such collections are constantly increasing in size and value. It is the desire of the Board of Control to so construct the principal buildings of the new Station that they can not be destroyed by fire.

The principal office building will be erected and paid for out of Wayne county's donation, but for other improvements and needed equipment we ask the General Assembly to make the following appropriations:

Main barn for feeding experiments, with fire-proof basement.....	\$16,000
Green-houses and insectary	6,500
Boiler-house, heating apparatus, water and gas supply	4,500
Fencing and drainage....	4,000
Stock for fruit and forestry planting.....	1,000
Livestock	7,000
Tool-house	1,500
Two dwellings.....	6,000

We also ask for an appropriation of \$500 to continue the field experiments with insects and fungous diseases of plants, full information concerning which will be given in the report of the Horticulturist, and one of \$350 for expenses of the Board of Control.

As the Station is a State institution, and one a very large proportion of whose work is of such a character that it must be of as much value to any other county in the State as to the one in which it is located, the Board of Control feel that it is a matter of simple justice that the State at large should furnish the necessary buildings and stock for the equipment of the farm.

The work that the Ohio Station has done the past season justifies a generous support. We call especial attention to the continued study and examination of the soils of the State with reference to the best methods of maintaining fertility, and to the experiments and tests with fungicides and insecticides which have given such valuable results.

The State appropriations of last year, amounting to three thousand four hundred dollars, have been or are being expended for the purposes for which they were granted, viz.: Eight hundred dollars for a fire-proof safe, office furniture and museum cases; six hundred dollars for field experiments with insects and fungous diseases of plants; one thousand dollars for sub-stations for field experiments with fertilizers; three hundred dollars for repairs and improvements; two hundred dollars for expenses of Board of Control, and five hundred dollars for illustrating bulletins.

During the year the following changes have been made in the Board of Control and working staff of the Station: J. L. McIlvaine, whose term of office as a member of the Board expired, was succeeded by the appointment of R. H. Warder. C. M. Weed, Entomologist and Botanist, resigned April 1, to accept a position in the New Hampshire Agricultural College. Dr. H. J. Detmers, Veterinarian and Bacteriologist, severed his connection with the Station July 1, in order to give his entire time to the professorship of Veterinary Science in the Ohio State University. John A. Alwood, foreman of the farm, resigned April 1. Prof. F. M. Webster,

special agent of the Division of Entomology, United States Department of Agriculture, was appointed Consulting Entomologist to this Station June 1. With the above exceptions the officers of the Station remain the same as last year.

The ability and enthusiasm shown by all the officers in carrying on the work of the Station is fully appreciated by the Board of Control, and special attention is called to the reports of the Director and other members of the Station staff, which give a comprehensive summary of the work of the year.

Respectfully submitted.

WILLIAM R. LAZENBY,
Secretary Board of Control.

REPORT OF THE TREASURER.

HON. S. H. ELLIS, *President Board of Control*:

SIR: I have the honor to submit herewith the financial report of the Station for the fiscal year ending June 30, 1891:

Statement A is a statement of account with the appropriation received from the U. S. Treasury, as provided for by the Hatch act, and is a copy of the report made to the Governor of the State and the Secretary of the U. S. Treasury.

Statement B shows the receipts from the produce of the farm and garden and the expenditures from this fund.

STATEMENT A.

THE OHIO AGRICULTURAL EXPERIMENT STATION IN ACCOUNT WITH THE UNITED STATES TREASURY.

Dr.

1891.
To receipts from Treasurer of the United States, as per appropriation for year ending June 30, 1891, under act of Congress approved March 3, 1887 \$15,000 00

Cr.

June 30, by salaries	\$8,081 25
" labor	8,817 16
" supplies ..	860 83
" freight and expressage.....	43 89
" tools and implements	239 23
" furniture and general fittings.....	26 20
" technical apparatus and supplies.....	145 58
" library	71 85
" printing, postage and stationery.....	1,436 84
" travel.....	127 92
" incidentals	12 85
" buildings	186 91

Total..... \$15,000 00

We, the undersigned, duly appointed auditors for the corporation, do hereby certify that we have examined the books and accounts of the Ohio Agricultural Experiment Station for the fiscal year ending June 30, 1891; that we have found the same well kept and correctly classified as above, and that the receipts for the time named are shown to have been \$15,000.00, and the corresponding disbursements \$15,000.00, for all of which proper vouchers are on file, and have been by us examined and found correct.

S. H. ELLIS,
R. H. WARDER,
Auditors Board of Control.

OHIO EXPERIMENT STATION.

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I hereby certify that the foregoing statement of account, to which this is attached, is a true copy from the books of account of the institution named.

BERTHA E. WILDMAN,
Treasurer Board of Control.

STATEMENT B.

OHIO AGRICULTURAL EXPERIMENT STATION IN ACCOUNT WITH PRODUCE FUND.

TO RECEIPTS.

Dr.

1891.		
June 30, from sales of milk	\$3,021 84	
" " agricultural produce.....	1,323 42	
" " horticultural produce	1,473 10	
" labor	168 89	
Total	\$5,987 25	
Cash on hand July 1, 1890.....	513 19	
Total	\$6,500 44	

BY EXPENDITURES.

Cr.

1891.		
June 30, for labor	\$4,150 55	
" supplies.....	551 56	
" freight and expressage.....	145 85	
" tools and implements.....	6 45	
" livestock	747 93	
" furniture and general fittings.....	48 45	
" technical apparatus and supplies.....	62 28	
" library	60 68	
" printing, postage and stationery.....	48 85	
" travel	5 60	
" incidentals	77 98	
" buildings (material and labor).....	474 55	
Total expenditures.....	\$6,380 23	
By balance, carried forward.....	120 21	
Total.....	\$6,500 44	

In addition to the income shown by the above statements, the sum of \$3,200.00 was received from the State Treasury by an appropriation made by the Legislature in the winter of 1890. Following is a statement of account with this appropriation, at the close of the fiscal year, ending June 30, 1891:

STATEMENT C.

STATEMENT OF ACCOUNT OF OHIO AGRICULTURAL EXPERIMENT STATION WITH STATE TREASURY.

Date.	Appropriation for—	Receipts.	Expenditures.	Balance.
1891. June 30	Finishing and furnishing museum and library	\$600 00	\$423 29	\$176 71
	Equipment of chemical laboratory	1,000 00	1,000 00	.....
	Repairs and addition to barn, and dynamo or engine.....	1,200 00	1,200 00	.....
	Laboratory of Entomologist and Botanist	200 00	200 00	.....
	Expenses of Board of Control.....	200 00	104 15	95 85
	Totals	\$3,200 00	\$2,927 44	\$272 56

The three foregoing statements are combined in Statement D, which shows the total receipts and expenditures for the year.

STATEMENT D.

TOTAL RECEIPTS AND EXPENDITURES OF THE OHIO AGRICULTURAL EXPERIMENT STATION FOR THE FISCAL YEAR ENDING JUNE 30, 1891.

RECEIPTS.

From U. S. Treasury.....	\$15,000 00
" sales of produce and labor	6,500 00
" State Treasury	3,200 00
Total.....	\$24,700 44

EXPENDITURES.

For salaries	\$8,081 25
" labor	7,967 71
" supplies	1,454 57
" freight and expressage	189 24
" tools and implements.....	815 53
" livestock	747 93
" furniture and general fittings.....	74 65
" technical apparatus and supplies.....	1,320 55
" library	187 53
" printing, postage and stationery.....	1,485 69
" travel.....	183 52
" incidentals.....	90 33
" buildings.....	1,805 02
" expenses of Board of Control.....	104 15
Total.....	\$24,307 67
By balance.....	392 77
Total.....	\$24,700 44

PERMANENT IMPROVEMENTS.

From the expenditures of the three different funds as itemized in the above statements, the amount used in permanent improvements on the farm is shown in Statement E:

STATEMENT E.

Buildings, material and skilled labor.....	\$1,518 67	
" ordinary labor	291 85	
Total.....		\$1,805 08

The expenditures from the appropriation of \$3,400 received from the State Legislature in the winter of 1891, having practically come within the fiscal year 1891-92, a statement of the same will be included in the next annual report of the Station.

Respectfully,

BERTHA E. WILDMAN,
Treasurer.

REPORT OF THE DIRECTOR.

HON. S. H. ELLIS, *President Board of Control*:

SIR: I herewith respectfully submit the tenth annual report of the Ohio Agricultural Experiment Station for the year 1891:

THE SEASON.

A large portion of Ohio was visited by destructive frosts on the nights of the 7th and 17th of May, which killed large fruits almost completely in a broad belt through the northern half of the State and greatly reduced the crop of strawberries. The young growth of grapevines was generally killed, and even hickory trees had their foliage destroyed when in almost full leaf. During August and September the northern half of the State suffered severely from drouth. With these exceptions the season has been generally favorable to the farmer, and the cereal crops have given a full average yield.

THE STATION'S WORK.

The general work of the Station has followed the lines indicated in previous reports. A feeding experiment, carrying still further the investigation into the comparative feeding value of corn silage and field beets, which had been the subject of two previous feeding tests, was made in the winter of 1891; its results have been held for publication in connection with a third experiment which is now in progress. The field experiments in the control of insects and fungus diseases of plants, for which a special appropriation was made by the General Assembly, have been carried out as planned, and have yielded results of very great value. These results are given in detail in Bulletin No. 9; they have demonstrated the practicability of very greatly improving the quality of apples and pears by spraying with fungicides, and of reducing the injury from curculio and other insects by adding an insecticide to the fungicide. Were we to stop here the work would be abundantly justified; but there are a few points upon which we believe further investigation is required, and we therefore ask for an appropriation of \$500 to be used in continuing these investigations another season. These points will be explained in the report of the Horticulturist, following.

CO-OPERATIVE EXPERIMENTS.

It gives me pleasure again to acknowledge the valuable assistance which farmers and fruit-growers in various parts of the State have rendered to the Station. The necessity for extending certain lines of the Station's investigations far beyond the limits of any single farm or county is self-evident, and the experiments made by intelligent farmers and fruit-growers, working in co-operation with the Station, have accomplished results which it would have been impossible to attain without their assistance.

But experimentation is expensive work, and it is not just to ask the private farmer to give his time and labor for the benefit of the public, nor is it possible for the Station, with its present resources, to compensate co-workers of this sort to the extent which the importance of the work demands.

I believe that the time is at hand for seriously considering the practicability of establishing sub-stations or test farms in various parts of the State, whereon such problems may be studied as are likely to be affected by variations of soil or climate. These sub-stations will not require for their equipment any of the expensive technical apparatus which constitutes a large portion of the outfit of the central Station, nor will it be necessary to man them with persons whose scientific training enables them to command high salaries. Their work should be planned and directed from the central Station, in order that it may be effectively co-ordinated, and in order that the duplication of laboratories and other technical outfit may be avoided; but in those lines of work which are of most immediate benefit to the farmer, provided they are conducted on a soil and under a climate similar to his own—such lines of work as the comparison of varieties of grains, fruits and vegetables and the study of the problem of maintaining the fertility of the soil—such a sub-station may accomplish more for the farmers of a given region than it is possible for any distant Station to do, however thoroughly it may do its work.

The farmers of Wayne county have manifested their faith in possibilities of agricultural experiment in a decisive manner. It is possible for the farmers of other counties to realize a considerable portion of the benefit to be derived from having such a Station in their midst at a comparatively insignificant cost, and I commend the enterprise and example of Wayne county's farmers to the farmers of other sections.

For the purposes of these sub-stations a farm of fifty to one hundred acres would be sufficient, and in many cases it would not be necessary to purchase any land, for in almost every county of the State there are already one or more public farms, a portion of many of which could be utilized for experimentation without any detriment to the public interest.

Such a sub-station might be managed by the local agricultural society, or the Board of County Commissioners, acting jointly with the Board of Control of the central Station.

PUBLICATIONS.

The publication of the newspaper bulletins of the Station has been continued throughout the year through the courtesy of the CENTRAL PRESS ASSOCIATION of Columbus, and these bulletins have received a wide circulation by republication in other journals.

The publication of the regular, or monthly bulletin, was practically suspended during the first half of the year, owing to the great amount of other printing required of the State printers during the session of the General Assembly and for some months thereafter. The annual report for 1890 was placed in the printer's hands in January, but was not printed until about the first of August, and bulletins prepared for publication during the winter were laid aside because they could not be issued in season to be of any service to farmers during the current year. It is to be hoped that some way may be devised by which more prompt publication may be secured hereafter.

Including the present number, ten bulletins have been issued during the year. A summary of the contents of these is here given, for the reason, explained in previous reports, that this is the only publication of the Station that is included in the report of the State Board of Agriculture.

BULLETIN No. 1, VOL. IV, JANUARY, 1891, BY J. F. HICKMAN AND C. E. THORNE.

ARTICLE I. *Experiments with corn—Continued*; including comparison of varieties, distribution of seed, seed from different parts of the ear, deep and shallow cultivation, methods of harvesting, varieties of ensilage corn, and use of fertilizers on corn. Following is a summary of the results attained:

Varieties: (a.) From the large yellow dent class only a few are recommended for Ohio soil, namely: Big Buckeye, Leaming, Leaming Improved, Murdock's Yellow Dent and Woodworth's Yellow Dent. From among these the Leaming or Leaming Improved might be selected as the most prolific.

(b.) Briar Crest Beauty, Chester County Mammoth, Golden Beauty, Golden Dent and Cloud's Early Dent are large and productive varieties, but can not be relied upon to mature on Ohio soils.

(c.) Golden Dent and Golden Beauty are believed to be one and the same variety. The Leaming and Leaming Improved do not show any marked variation in point of productiveness, and it is questionable whether the one has any advantage over the other.

(d.) The Clarage from among the medium dents and the Butcher corn from the mixed dents are both good varieties, and will mature in an ordinary season.

(e.) The Farmers' Favorite is a good yielder, but has failed to mature this season. This we think was entirely due to the short and unfavorable season.

(f.) From the list of white dents should be excluded Blount's White Prolific and Old Cabin Home, on account of their failure to mature. They require a longer season than our latitude affords.

2. *Distribution of seed:* (a.) The results of previous experiments are confirmed by the work of this year in showing that more and better corn can be raised to the acre where the stalks average twelve inches apart than where they are at less or greater distances.

(b.) The results in general are as good where the corn is planted in hills as when planted in drills, when the average distances of the grains or stalks are the same.

3. *Seed from different parts of the ear.*—The results of four years' comparative test fail to show any marked superiority in the productiveness of seed taken from the butt, middle or tip of the ear.

4. *Deep and shallow cultivation.*—The results of two years' experiments are slightly in favor of shallow culture.

5. *Methods of harvesting.*—The exact stage of maturity at which corn is cut may materially affect its final yield per acre.

6. *Varieties of ensilage corn.*—Red Cob Ensilage, Blount's White Prolific and B. & W. are good varieties for the silo. Early Sanford and sweet fodder corn are not as a rule profitable in this State for silo purposes.

Corn intended for the silo should be planted previous to the middle of May to insure a sufficient degree of maturity.

7. *Fertilizers on corn.*—The results of two years' experiment, conducted on the Station farm and in various sections of the State, indicate that the use of commercial fertilizers on corn, at present prices of grain and fertilizers respectively, is likely to result in loss more often than in profit.

BULLETIN NO. 2, VOL. IV, FEBRUARY, 1891, BY C. M. WEED.

ARTICLE II. *Miscellaneous experiments in the control of injurious insects.*—London purple was found much more liable to injure foliage than Paris green, but this injury was almost entirely prevented by the addition of lime to the spraying liquid. In large plum orchards, spraying with London purple was found a practicable preventive of the curculio. In one experiment, spraying with a lime whitewash protected grapes from the rose bug. Several remedies for the cucumber beetle are given, and experiments are reported showing the effectiveness of tobacco dust as an insecticide.

ARTICLE III. *Some common cabbage insects.*—An illustrated description, with preventives, of several of the more common cabbage depredators.

ARTICLE IV. *Three important clover insects.*—An illustrated description of the clover root borer, the clover seed midge and the clover hay-worm.

BULLETIN NO. 3, VOL. IV, AUGUST 1, 1891, BY C. E. THORNE AND J. F. HICKMAN.

ARTICLE V. *Commercial and other fertilizers on wheat*, with an appendix describing some fertilizing materials and their use. Following is the summary of results of field trials with fertilizers for two years:

In 1890 the various fertilizers used produced, in every case, some increase of crop. When nitrate of soda was used alone its cost was recovered in the increase of crop, counting wheat at \$1.00 per bushel, but in no other case, in the Station test, was the cost of any of the fertilizers or combinations of fertilizers recovered, except in that of barnyard manure.

2 A. Appendix.

In the test in Columbiana county the increase of crop on plot 2 apparently justified the use of superphosphate; but this increase was not confirmed by the duplicate plots 5 and 8, hence we are led to doubt whether this increase may not have been due to natural superiority in the soil of this plot. In general the fertilizers added less to the unaided yield of the Columbiana county soil than they did to that of the Station soil, notwithstanding the fact that the unfertilized plots on the Station farm yielded twice as much wheat on an average as did those on the farm in Columbiana county.

In the tests of 1891 at the Station, the fertilizers have in every case, caused a decrease of crop where superphosphate was used. Nitrate of soda, alone or with potash, has produced a slight increase, but in no case has the increase been sufficient to justify the use of the fertilizer, and this applies both to the wheat grown continuously on the same soil and to that grown in rotation.

In the tests of 1891, the wheat grown in rotation, without fertilizers, has yielded as large an average crop as the best obtained from the use of the fertilizers in 1890, although the yield from the unfertilized plots under continuous cropping was practically the same in both seasons.

BULLETIN No. 4, VOL. IV, AUGUST 25, 1891, BY J. F. HICKMAN.

ARTICLE VI. *Experiments in wheat seeding, including treatment of seed for smut.*

Quantity of Seed per Acre.

Summary: (1.) This experiment, which has been continued for a series of ten years, furnishes conclusive evidence that higher yields are obtained from seeding at a rate not below five pecks per acre, nor exceeding seven pecks.

(2.) Seeding below four pecks per acre gives a fewer number of bushels of inferior quality.

Seeding above seven pecks per acre gives fewer bushels, but a superior quality of grain.

Methods of Seeding and Winter Protection.

(1.) Broadcast seeding has given as good results this year as drilling, but in a series of years drilling has produced the largest crop.

(2.) Very light mulching has apparently been of some benefit this year. Heavier mulching has invariably injured the crop.

(3.) Cross drilling has shown no advantage this year.

(4.) No larger crop has been produced this year from mixed seed of two varieties than from pure seed of the same varieties, sown separately.

(5.) The "stinking smut," or "bunt" of wheat may be almost completely eradicated by soaking the seed wheat in solution of copper sulphate, and the same result may be more economically obtained by immersing the seed in water heated to 132° to 135° Fah.

ARTICLE VII. *Comparative test of varieties of wheat, sixty-five differently named sorts being grown on plots of one-tenth acre each:*

Summary: (1.) The red bearded varieties producing the highest yields for the year were Rudy, Valley, Diehl-Mediterranean and Lehigh in the order named. The white bearded varieties giving the highest yields were Democrat, Golden Prolific and Silver Chaff.

(2.) Of the smooth red wheats Red Fultz, Poole and Witter stand at the top of the list, while the Surprise and Miller's Prolific are among the highest producing white smooth varieties.

(3.) The Farquhar, Geneva, New Monarch, McQuay, Hungarian and Ontario Wonder are apparently more susceptible to smut than other varieties in the list.

(4.) Among the newer varieties the Mealy and Rudy are the most promising, while the Hybrid Larned and the Hybrid Dattle are thus far decided failures.

(5.) The variations in weight per measured bushel in the several varieties between the screened and unscreened grain has run from nothing in some varieties up to thirteen per cent. in others.

(6.) The proportion of straw to grain was greater this year on land where wheat had been grown for ten years than it was on land where a system of rotation has been followed.

(7.) *Diseases and Insects.* Rust was seemingly as bad upon one variety as another.

The Scab attacked later varieties more than earlier ones.

The "Bunt" or Stinking Smut was worse upon some varieties than others.

The wheat midge or "red weevil" appeared in spots rather than upon particular varieties.

BULLETIN No. 5, VOL. IV, SEPTEMBER 1, 1891, BY F. M. WEBSTER.

ARTICLE VIII. *The Wheat Midge.*—A description of this insect (often called the red weevil) with a history of its appearance, spread and depredations in Ohio. Concerning remedies, Mr. Webster says:

The present season (1891) the wheat midge appeared in the wheat fields of the Experiment Station in considerable numbers. From glancing over the preceding record of the occurrences of the pest during past years, it will be clearly observed that local outbreaks like this, lasting but a single year, are of common occurrence, and it is not possible to say now, to what extent the insect will appear next year, or even if it will appear at all. Therefore, while late varieties and late sown grain would probably be most affected, in case of a reappearance, the early sown grain will court the attack of Hessian fly. Hence, the prospect of the reappearance of the midge next year, does not seem to me sufficient to warrant advising generally early sowing this fall, as a means of protecting the crop next season.

BULLETIN No. 6, VOL. IV, OCTOBER, 1891, BY W. J. GREEN AND FREDA DETMERS.

ARTICLE IX. *Experiments With Small Fruits in 1891.*

Summary: (1.) The blossoms of perfect flowered varieties of strawberries are more easily killed by frost than those having imperfect flowers.

(2.) Haverland, Crescent, Warfield and Bubach are the most reliable of the fully tested varieties of strawberries. Gandy, Pearl and Miner are suitable for pollenizers.

(3.) The new varieties of strawberries that are the most promising are Brunette, Barton's Eclipse, Beder Wood, Dayton, Enhance, Greenville, Ivanhoe, Lovett's Early, Muskingum, Parker Earle and Shuster's Gem.

(4.) The following require further trial, but so far seem to be worthy: Bessie, Edgar Queen and Van Deman.

(5.) The following appear to have but little value or at least some serious faults: Stevens, Great Pacific, Lady Rusk.

(6.) The following well known and fully tested varieties of raspberries are recommended for general cultivation: Gregg, Ohio, Hilborn, Palmer, Turner, Cuthbert, Brandywine and Shaffer.

(7.) The following new varieties of raspberries are promising: Cromwell, Kansas, Lovett, Muskingum, Royal Church, Thompson's Early Prolific.

- (8.) Smith's Prolific appears to be of little value because of its tendency to rust.
- (9.) The hardiest varieties of blackberries, and most suitable for this latitude, are Snyder, Ancient Briton and Agawam.
- (10.) Erie and Minnewaski are the most promising of the newer varieties.
- (11.) The value of Early Harvest seems to have been overlooked. It is very early and comparatively hardy.
- (12.) Wilson Jr. and Child's "Everbearing Tree Blackberry" are too tender for this latitude. The latter name is a misnomer, and the variety is the most nearly worthless of any that has been tested here.
- (13.) The following mixture has proved efficient in preventing the raspberry scab, or anthracnose: Copper sulphate, 4 pounds; lime, 4 pounds; water, 50 gallons.
- (14.) Four applications should be made during the season, the first before growth has commenced in the spring and the last just before the time of blooming.
- (15.) Care should be taken in making the second, third and fourth sprayings, to direct the spray towards the young canes, and to keep it off the leaves of the bearing canes.
- (16.) Six ounces of copper carbonate dissolved in three pints of ammonia, and diluted with water to fifty gallons is nearly as efficient as the above, but preference is given to the dilute Bordeaux mixture.

ARTICLE X. *Diseases of the Raspberry and Blackberry.*—A technical description of anthracnose, *Septoria rubi*, red rust and a bacterial "blight" of the raspberry and blackberry.

BULLETIN No. 7, VOL. IV, NOVEMBER, 1891, BY F. M. WEBSTER.

ARTICLE XI. *The Hessian Fly.*—Description and historical notes concerning this insect, with account of experiments for its control.

Summary: The Hessian fly is a small, two-winged fly about one-eighth of an inch long and of a dusky color and appears during May and June and again in September and October. The eggs are deposited on the upper side of the leaves, and the young, as soon as they hatch, make their way down the plant, behind the sheath, to near the lower joints and there become imbedded in the soft part of the stem. Here they pass the winter and also the summer, in the former case in young wheat, and in the latter case in the stubble. The adults appear and the eggs are deposited at dates varying with the latitude, being earlier in the fall to the northward and later to the southward.

The preventives are, burning stubble, late sowing, rotation of crops. Pasturing early sown wheat in the fall may destroy many of the maggots and "flaxseeds."

BULLETIN No. 8, VOL. IV, NOVEMBER, 1891, BY O. E. THORNE.

ARTICLE XII. *Forty Years of Wheat Culture in Ohio.*—A statistical study of the forty wheat harvests, 1850 to 1889, inclusive, from which the following conclusions are drawn:

It would seem that the average yield of wheat is increasing in the northern and central sections of the State, while it is at a standstill, and standing at far too low a point for profit, in the southern and south-eastern counties.

It would seem that the profitable culture of wheat on the steep hillsides of southern Ohio is a hopeless undertaking; that the great problem before the wheat grower of the central belt of counties is winter-killing, a problem which may be partially solved by underdrainage and the intelligent use of clover and manures; and that in the northern counties climatic influences are more generally favorable to wheat culture than elsewhere in the State.

These statistics indicate that the wheat crops of Ohio have been slightly increased by the use of commercial fertilizers, but it appears that the average cost of this increase has equaled its market value, and that a general improvement in the methods of agriculture has contributed more largely to the increase of Ohio's wheat crops than the use of purchased fertility.

It would seem that the total area under wheat might be considerably enlarged, and at the same time more closely restricted to lands adapted to tillage, and that the yield per acre may be so increased that the total product shall reach double the quantity now annually produced.

BULLETIN No. 9, VOL. IV, DECEMBER, 1891, BY W. J. GREEN AND FREDA DETMER.

ARTICLE XIII. *The Apple Scab*.—A technical description, illustrated.

ARTICLE XIV. *The Spraying of Orchards*, including: (1) Spraying to prevent the scab of the apple and pear; (2) spraying for the plum curculio; (3) spraying for the "shot-hole" fungus of the plum; (4) preparation of spraying mixtures; (5) manufacturers and dealers in spraying appliances.

Summary: (1) The apple scab is a parasitic fungus, growing upon leaf and fruit, and flourishing in cool, moist weather.

(2) The effect of the scab is to cause a large proportion of the fruit to drop while quite small; to greatly disfigure and reduce the size and market value of that which matures, and to injure the vitality of the tree by causing a premature falling of the foliage.

(3) The growth of the scab fungus may be checked by spraying the trees at proper times during the spring with several of the copper compounds commonly used as fungicides.

(4) The most satisfactory compound thus far tested, regard being had to cost, convenience and effectiveness, is a "dilute Bordeaux mixture," containing four pounds copper sulphate, four pounds lime and fifty gallons of water.

(5) While it was not found practicable to completely prevent the growth of the scab in a single season, the experiments demonstrate that it is practicable to so reduce the injury from the fungus that the total value of the crop shall be very greatly increased, and that the value of this increase will far more than repay the necessary cost of using the fungicide.

(6) The effect of judicious spraying with fungicides is to check the dropping of immature fruit in the spring; to cause it to grow to larger size and more free from blemishes; to cause it to hang better to the tree while ripening; to cause it to take on higher color in ripening, and to improve its keeping quality. As measured by market value, spraying has added nearly 100 per cent. to the value of the crop at a cost of less than fifteen cents per tree.

(7.) It has been demonstrated that the plum curculio may be held in check by spraying almost or quite as effectually as by jarring, and far more cheaply.

FARMERS' INSTITUTES.

The members of the Station staff have taken an active part in the farmers' institutes held throughout the State during the winter. For the opportunity of meeting the farmers of the State in these institutes we are again indebted to the cordial co-operation of Mr. L. N. Bonham, Secretary of the State Board of Agriculture, under whose direction the institutes are conducted.

ACKNOWLEDGMENTS.

The publishers of the following journals have aided the Station in its work during the year, either by republishing abstracts from its bulletins or by donating their publications to its library:

AGRICULTURAL PAPERS OF OHIO.

American Farm News, Akron.
 American Grange Bulletin, Cincinnati.
 Buckeye Farmer, New Carlisle.
 Co-operative Farmer, Columbus.
 Farm and Fireside, Springfield.
 Farmers' Alliance Herald, Cardington.
 Farmers' Home, Dayton.
 Gleanings in Bee Culture, Medina.
 Ohio Farmer, Cleveland.
 Our Rural Home, Cleveland.
 Stuart's Agriculturist, Cleveland.

GENERAL PAPERS OF OHIO.

Arcanum Enterprise, Arcanum, Darke county.
 Attica Journal, Attica.
 Auglaize County Democrat, Wapakoneta.
 Bakersville Press, Bakersville.
 Barnesville Republican, Barnesville.
 Bethel Review, Bethel.
 Cincinnati Weekly Commercial Gazette.
 Cincinnati Weekly Enquirer.
 Cortland Herald, Cortland.
 Daily Democrat, Springfield.
 De Graff Buckeye, De Graff.
 Democratic Herald, Delaware.
 Democratic Record, Chardon.
 Economist, The, Cincinnati.
 Fredericktown Free Press, Fredericktown.
 Fremont Journal, Fremont.
 Greenville Democrat, Greenville.
 Industrial News, Toledo.
 Jacksonian, Wooster.
 Leader, Chillicothe.
 Lewisburg Reporter, Lewisburg.
 Lodi Review, Lodi.
 Malta Register, Malta.
 Northern Ohio Journal, Painesville.
 Ohio State Journal, Columbus.
 Painesville Telegram, Painesville.
 Pataskala Standard, Pataskala.
 Plain City Dealer, Plain City.
 Press, The Daily, Columbus.
 Public Opinion, Westerville.
 Republic Times, Springfield.

Sandusky Democrat, Sandusky.
Scio Weekly Herald, Scio.
Shelby News, Shelby.
Springfield Daily Gazette, Springfield.
Tuscarawas Advocate, New Philadelphia.
Tuscarawas Chronicle, Uhrichsville and Dennison.
Union County Journal, Marysville.
Valley Enterprise, Milford.
Wayne County Democrat, Wooster.
Wayne County Herald, Wooster.
West Liberty Banner, West Liberty.
Wooster Daily Republican, Wooster.

MISCELLANEOUS PAPERS.

AGRICULTURAL.

Agricultural Epitomist, Indianapolis, Ind.
Agricultural Journal, Montgomery, Ala.
Agricultural Science, Lafayette, Ind.
Agricultural Science, New South Wales.
Alliance Farmer and Rural Messenger, Petersburg, Va.
American Agriculturist, New York, N. Y.
American Bee Journal, Chicago, Ill.
American Farm Horticulturist, Richmond, Va.
American Garden, New York, N. Y.
American Homestead, Omaha, Nebr.
American Rural Home, Rochester, N. Y.
Breeder's Gazette, Chicago, Ill.
Canadian Entomologist, London, Ont.
Country Gentleman, Albany, N. Y.
Dakota Farmer, Huron, S. Dakota.
Farm and Home, Chicago, Ill.
Farmers' Advocate, London and Winnipeg.
Farmers' Institute, Mason City, Ia.
Farmers' Voice, Chicago, Ill.
Farm, Field and Stockman, Chicago, Ill.
Farm Implement News, Chicago, Ill.
Farm Journal, Philadelphia, Pa.
Farm, Stock and Home, Minneapolis, Minn.
Florida Agriculturist, De Land, Fla.
Holstein Friesian Register, Boston, Mass.
Home and Farm, Louisville, Ky.
Horticultural Art Journal, Rochester, N. Y.
Husbandman, The, Elmira, N. Y.
Indiana Farmer, Indianapolis, Ind.
Journal of Agriculture, St. Louis, Mo.
Journal of Mycology, Washington, D. C.
Maritime Agriculturist, St. John, N. B.
Mark Lane Express, London, Eng.
Meehan's Monthly, Germantown, Philadelphia, Pa.
Mirror and Farmer, Manchester, N. H.
National Horticulturist, Cambridge, Md.
National Stockman and Farmer, Pittsburg, Pa.
New Dairy, The, New York, N. Y.

Orange Judd Farmer, Chicago, Ill.
 Orchard and Garden, Little Silver, N. J.
 Our Country Home, New York, N. Y.
 Pacific Rural Press, San Francisco, Cal.
 Practical Farmer, Philadelphia, Pa.
 Prairie Farmer, Chicago, Ill.
 Rural Critic, Garrettsville, Otsego Co., N. Y.
 Rural New Yorker, New York, N. Y.
 Science, New York, N. Y.
 Southern Cultivator and Dixie Farmer, Atlanta, Ga.
 Sugar Beet, Philadelphia, Pa.
 Weekly Globe and Canada Farmer, Toronto, Canada.
 Western Breeder, St. Joseph, Mo.
 Western Garden and Poultry Journal, Des Moines, Ia.
 Western Resources, Lincoln, Nebr.
 Western Stockman and Cultivator, Omaha, Nebr.
 Western Swineherd, Geneseo, Ill.
 Wisconsin Farmer, Madison, Wis.

GENERAL

Albilene Reporter, Albilene, Tex.
 Baltimore Sun, Weekly, Baltimore, Md.
 Boston Globe, Weekly, Boston, Mass.
 Detroit Free Press, Detroit, Mich.
 Engineering and Mining World, The, New York, N. Y.
 Hospodar, Omaha, Nebr.
 Industrial American, Lexington, Ky.
 National Provisioner, New York, N. Y.
 Press, The Weekly, New York, N. Y.
 Press, The Weekly, Philadelphia, Pa.
 Republican Leader, New Lisbon, O.
 World, The Weekly, New York, N. Y.

IMPLEMENTS, SEEDS AND PLANTS RECEIVED.

Thanks are returned for the following donations to the Station:

AGRICULTURAL DEPARTMENT.

The Cleveland Linseed Oil Co., 5 sacks linseed meal.
 D. K. Brewer, Xenia, O., seed wheat.
 Chas. W. Bush, Selden, O., seed wheat.
 W. H. Denlinger, Eaton, O., seed wheat.
 The Emerson Seed Co., Omaha, Neb., 4 varieties seed corn.
 Steel Bros., Toronto, Ontario, seed wheat and carrot seed.
 The Kentucky Experiment Station, Lexington, Ky., seed wheat.
 The Missouri Experiment Station, Columbia, Mo., seed wheat.

HORTICULTURAL DEPARTMENT.

E. W. Cruse, Leavenworth, Kansas, 3 varieties strawberry plants.
 H. S. Crow, Little York, O., 1 variety strawberry plants.
 Samuel Dagwell, Utica, N. Y., 1 variety gooseberry plants.
 J. T. Derror, Pavonia, O., 1 variety raspberry plants.

Frank Ford, Ravenna, O., currant and blackberry plants.
Mr. Hilborn, Leamington, Ont., 1 variety currant.
Jacob Knopp, Columbiana, O., 1 variety raspberry plants.
R. D. Luther, Fredonia, N. Y., 1 variety blackberry.
L. Madison, Chili, O., 1 variety raspberry.
E. A. Ruhl, Alton, Ill., 1 variety strawberry plants.
Wm. A. Maule, Philadelphia, Pa., potatoes and seeds.
M. T. Thompson, Rio Vista, Va., 1 variety strawberry.
J. C. Vaughan, Chicago, Ill., seeds.
U. S. Dept. of Agriculture, Washington, D. C., seeds and scions.
Milliken Bros., Traverse City, Mich., Acme Potato Planter.
A. W. Livingston's Sons, Columbus, O., seeds.
George S. Josselyn, Fredonia, N. Y., 1 variety gooseberry plants.
The Perfection Sprayer Co., Waterloo, Ind., hand spraying machine.

The Acme potato planter is a small machine, designed to be used in a similar manner to the common hand corn planters. It was received too late to give it a thorough test, but from its construction we would expect it to be useful in planting small lots of potatoes.

The spraying machine is a syringe; designed for spraying single plants, such as rose bushes, etc.

The seeds and plants will be reported upon in future bulletins.

In conclusion, I have the pleasure of reporting another year of earnest, harmonious effort on the part of those directly engaged in the Station's work, and of cordial and united effort on the part of the Board of Control.

CHAS. E. THORNE,
Director.

REPORT OF THE AGRICULTURIST.

The work of this department has been conducted along the same general lines as indicated in former reports; some features of the work being curtailed, while others have been extended by additional work to bring out special points of interest heretofore undeveloped.

Experiments with field crops continue to be the leading work of the department. During the year the following work has been carefully carried on:

Wheat. (1.) A comparative test with sixty-five varieties, among which were six previously untried upon the Station grounds.

(2.) A comparative test of fourteen of these varieties upon first and second bottom land, and upon land on which a rotation had been followed, compared with yields from land upon which wheat had been grown continuously for ten seasons.

(3.) Seeding at different rates per acre, duplicating each plot, then re-duplicating the first list with another variety.

(4.) Methods of seeding, such as drilling the land both ways, putting on one-half of the seed at each drilling; seeding the land with two varieties of wheat thoroughly mixed; deep and shallow planting; rolling before and after seeding; shoe drilling and hoe drilling compared; broadcasting compared with drilling; mulching compared with unprotected wheat land.

(5.) Practical tests for destroying smut germs on seed wheat; (a) by treating with copper sulphate solution; (b) by treating with hot water.

(6.) Experiments with commercial and other manures, both on Station and other grounds.

Oats. Experiments with oats for 1891 were conducted on exactly the same lines as are given in previous reports, including variety tests; thick and thin seeding, and tests with commercial and other manures.

The almost total failure of the oats in 1890 left us such an inferior grade of seed from our small plots that the growth of this year from the seed of last was very irregular, and as a consequence the study of synonyms was in a measure out of the question, though some progress has been made.

The results of experiments with oats for 1890 and 1891 will be ready for publication at an early date.

Corn. (1.) (a) About twenty-six varieties of dent corn were planted for a comparative test in yields of grain per acre. (b) Seven varieties of ensilage corn for a comparative test of fodder yields per acre. (c) Four of the best producing varieties were sent into twelve different counties of the state to responsible farmers, for a comparative test upon different soils.

(2.) Experiments in methods of planting and culture were conducted as follows: (a) Contrasting deep and shallow culture. (b) Distribution of seed, including hill and drill planting. (c) Testing vitality of seed by planting continuously seed from the same parts of the ear. (d) Experiments with commercial and other manures were conducted both upon the Station and other grounds, including in all thirty-eight tenth-acre plots.

In addition to the above series of plots in wheat, oats and corn a block consisting of thirty-five one-twentieth acre plots has been devoted to a system of rotation, in the order of corn, oats and wheat, followed by two years in grass.

Fourteen plots were devoted to German millet, and to testing the utility of oil-meal as a fertilizer; the results were compared with yields from the use of nitrate of soda.

Field beets. Nearly four acres of land were devoted to mangels and sugar beets, including the following:

- (a.) Comparative test of varieties.
- (b.) Continuation of test on soil exhaustion.
- (c.) The effect of transplanting on mangels with and without topping.
- (d.) Growing sugar beets isolated and dense for the purpose of comparing quality.

(e.) During the year the test of 1890 was repeated to show the actual cost of producing an acre each of mangels and ensilage corn.

In all the variety tests the aim is to reduce the number each year by discarding worthless varieties and giving more attention to the more promising ones, and using them as standards to compare with the new varieties that are constantly appearing and demanding attention.

Dairy. The repairing done to the dairy barn in 1890 enabled us to enlarge upon the feeding experiment for 1891, which was conducted upon substantially the same basis as the feeding trial of 1890, namely: a comparison of ensilage and mangels in the production of milk.

During the entire year the milk from each of thirty cows has been carefully weighed and a record kept; an analysis of each cow's milk has been made some three or four times by Babcock's method, while the milk

of each cow in the feeding experiment has been tested each week during the experiment.

It is but simple justice to say here that my department has been disturbed upon every side by the city improvements, which have made inroads in almost every field experiment. The intercepting sewers have destroyed entirely a part of the wheat, oats and corn work. The grading of Neil avenue through the north field destroyed one plot of oats in the fertilizer tests and reduced the size of the millet plots. Truant boys burned a part of a plot of corn, and some bicycle riders threw a locked gate off its hinges and let the whole herd of cows into a field of corn.

The intercepting sewer work has caused extra expense to the department, because we were compelled either to keep our cattle in the barn yard about one-half the time during the summer or else have a herdsman with them. These annoyances have not made any of our reported work any the less accurate, but they have in every case caused some work to be thrown out because of its being unreliable. The constant danger from trespassers has required no little patience and considerable extra work both to myself and farm hands during the six or seven months of open weather. Aside from this the work in my department has moved on harmoniously and satisfactorily.

J. FREMONT HICKMAN,
Agriculturist.

REPORT OF THE HORTICULTURIST.

The work in the Horticultural Department the past season has been along the same lines as in former years, and in addition experiments with insecticides and fungicides have been conducted.

VARIETY TESTING.

The principal part of the work in variety testing was as follows:

(1.) Small fruits, including strawberries, raspberries and blackberries. An account of the varieties of the fruits named was given in the Bulletin for October, 1891. Other fruits were so much injured by frost that a report was not possible.

(2.) Vegetables. The work of testing varieties of vegetables and determining synonyms presents such difficulties that it was determined to make a new departure in methods. A variety test that is not carried through several seasons and on a considerable scale can not be conclusive, nor can synonyms be clearly made out unless observations are extended through several seasons. Hence it was determined to report upon no class of vegetables until the work was carried as far as means would permit, and as the results seemed to warrant and necessity demanded. It becomes necessary in carrying out this plan to make a separate report upon novelties as often as may be necessary. Such a report will probably be made during the year. The most important variety work now in progress is with onions, celery, lettuce, radishes, cauliflower, tomatoes, sweet corn and peas.

With onions the varieties are tested both in the ordinary manner, by sowing the seed in the open ground, and by sowing in the greenhouse and transplanting. This increases the work and makes a careful study of synonyms necessary. Considerable attention was given to this vegetable the past season, but the results are not ready for publication.

Lettuce and radishes are tested in the greenhouse, in hot beds and in the open ground. The progress made last season with these vegetables was satisfactory, but some results need verification.

Variety work with peas has been confined mainly to a comparison of the different strains of the so-called extra earlies.

The work with celery and sweet corn can probably be reported upon the coming season.

A variety test of potatoes was made at the Station and small lots were also sent to growers in different parts of the State, and the results will be given in a subsequent bulletin.

Tomato trials have been made in the greenhouse and out of doors.

GREENHOUSE WORK.

Two well constructed greenhouses, each 20 by 100 feet, have been in use two seasons. Lettuce, radishes and tomatoes are the leading crops grown and mainly for variety testing, but not wholly. The houses have also been used for starting all classes of plants that are to be transplanted into the open ground. Asparagus, dandelion, pie plant and mushrooms have been grown under the benches.

Fertilizer tests were made last winter upon lettuce, radishes and tomatoes, the particular point aimed at being to test the value of nitrogenous fertilizers upon the above named crops when grown under glass. The results were wholly negative, no evidence being secured that would indicate that nitrate of soda or sulphate of ammonia were of any benefit. A rich compost was of course used, such as is ordinarily employed by gardeners.

Underground or sub-irrigation has been experimented upon two seasons in the greenhouse, the primary object being to supply water to lettuce plants without wetting the leaves, in order to test the theory that wet foliage favors the development of the rot fungus. These experiments are not complete, but the evidence is favorable to the plan. Not only is there less rot upon the sub-irrigated plots, but the growth is much better than upon those where surface watering alone is practiced, the increase in yield of crop being from 20 to 40 per cent. The indications at present are that this method of watering promises much for lettuce growers, but more experiments are needed to settle some points.

The greenhouses are heated with hot water, one being piped overhead, and the other underneath the benches. The difference between the results obtained with the two systems is not sufficient to warrant many general statements. The snow melts more quickly on the house where overhead heating is practiced, and the plants in this house are rather taller than in the other, but so far as lettuce is concerned the average weight per plant is about the same in the two houses. At present it would seem to be largely a matter of convenience as to which method should be adopted. The size of the glass is 16x24, and the evidence is decidedly in favor of this rather than a smaller size.

CULTURAL METHODS.

Sub-irrigation has been given some attention, and particularly in connection with the bed method of growing celery. The experiments are not far enough advanced to speak confidently, but there seems to be reason to believe that the method can be used successfully upon this and several other garden crops.

A report can be given the coming season on the bed method of growing celery, and some other improvements in details of growing this crop.

Experiments in transplanting onions have been continued, and some new facts brought out that are of value, a report of which must be deferred for a time.

SPRAYING TO PREVENT FUNGUS DISEASES AND THE DEPREDACTIONS OF INSECTS.

A report of this work has been given in Bulletin No. 9, December, 1891. There still remain some important questions to be investigated. Of the mixtures advised by other experimenters, the dilute Bordeaux mixture seems to possess the greatest advantages, but a new compound, devised last season and not fully tested, seems to be superior for certain purposes, and deserves further testing. The time that fungicides should be applied, as well as the number of applications, needs further investigation. Results indicate that early applications are necessary, but more complete demonstration is needed, nor have we yet determined the minimum number of sprayings required. Some indications sustain the belief that there might be a reduction of the strength of mixtures with economy and without risk. The plum rot and black knot are much dreaded diseases that have not been sufficiently experimented upon, but it is probable that both may be held in check with the proper preventives. Several diseases attack garden crops that have not been controlled. This work has been so full of good results the past season, and there are so many reasons for its continuance that it can not be dropped without great loss to important interests.

W. J. GREEN,
Horticulturist.

REPORT OF THE CONSULTING ENTOMOLOGIST.

By an arrangement between the Board of Control of the Station and the Entomologist of the United States Department of Agriculture, I was transferred to the Station on July 1st, 1891, the duties of Consulting Entomologist being added to those of Special Agent of the Division of Entomology, United States Department of Agriculture. It is expected that by this arrangement both the Department and the Experiment Station will be mutually benefited. The object of the combined offices will be the investigation of the habits of insects with especial reference to their relation to the various branches of agriculture, and to this object every thing else will be made subservient. Investigations and personal inspection will be made throughout the State when necessary, by order of the Secretary of Agriculture, and under the direction of the Entomologist, and the expense thereof will be borne by the Department. It is, therefore, especially desirable that all insect depredations be promptly reported to the Station. Bulletins will be issued from time to time, giving a consensus of all available information upon certain destructive insects, and the best methods of preventing or of controlling them.

In the matter of publications, the Consulting Entomologist has no personal pride whatever to gratify, and the number and nature of future bulletins will be largely in conformity with the actual wants of the agricultural public. The nature of correspondence received will be one of the important factors in deciding this matter. It is expected that each bulletin will treat of one or more insects separately, thoroughly, practically, and in as popular a manner as possible. As an illustration, Bulletin 5 treats of the Wheat Midge, Bulletin 7 treats of the Hessian Fly. Future numbers will be devoted to the consideration of other wheat destroying species, and the complete series will include all insects known to affect this cereal in the State of Ohio.

The limited time that has elapsed since the beginning of my work in this State will preclude the necessity for a lengthy report. The various subjects under investigation are as follows:

1. The Hessian Fly (*Cecidomyia destructor*), and the effect of climatic conditions on its development.

2. Studies of the various species of Crane Flies (*Tipulidæ*), with especial reference to preventing their depredations.
3. Studies of the habits of the several species of White Grubs (*Lachnosterna*).
4. Studies of the Fruit Bark Beetle (*Scolytus rugulosus*).
5. Investigation of the habits of a timber boring beetle (*Lyctus striatus*).

In addition to these, work is being pushed forward relating to many other insects of the orchard, garden and field.

F. M. WEBSTER,
Consulting Entomologist.

8 A. Appendix.

REPORT OF THE BOTANIST.

Until April 1st, 1891, the division of Botany was united with the division of Entomology, and was under the charge of Mr. Clarence M. Weed. I was then his assistant. On the resignation of Mr. Weed, I was made Acting Botanist, and later, the Botanist of the Station. I did not assume charge of the work however until May 11th.

The work of the division during the past year has mainly been confined to a careful study of the fungous diseases of plants, and in one case of insects, especial attention being paid to those of economic importance. Briefly stated the diseases investigated are as follows: The diseases of the raspberry and blackberry, including the discovery of the occurrence of an undescribed bacterial disease affecting the Marlborough raspberry and the Snyder blackberry; apple scab; plum pockets; lettuce mildew; *Empusa Aphidis*; an undescribed bacterial disease of oats; a bacterial disease of turnips; an apparently new disease of fall wheat; and a septoria on *Lactuca scariola*, which to my knowledge has not been reported on that host.

The results of some these investigations have been published, the remainder are not yet ready for publication.

A descriptive catalogue of the Rusts of Ohio is also begun, and will be continued until the list is complete. Numerous letters of inquiry have been answered. Additions have been made to the herbarium from time to time. The specimens are being mounted, labeled and arranged this winter, preliminary to making out a catalogue of them.

Considerable time has been devoted to making drawings, charts, etc., for the other departments; and some time has been taken up with library work.

Respectfully submitted.

FREDA DETMERS,
Botanist.

REPORT OF THE METEOROLOGIST.

The weather of the year has been marked by the absence of extremes of temperature; high average temperature during December; nearly normal rainfall; late frosts, both in spring and fall; and an unusual amount of clear weather, especially during September, October and December.

Severe frosts occurring as late as the middle of May, seriously damaged the fruit crop. On the other hand the lateness of the first autumn frosts allowed the corn crop to ripen and all late crops to be well secured.

Cold, cloudy weather and frequent rains prevented any spring working of the ground until the last week of April.

Through the growing season the weather was mostly favorable. Harvest weather was fair. Corn suffered slightly from lack of rain in August and September, but ripened well in the bright weather. Fall pastures were short on account of the drouth during August, September and the first half of October.

The danger of a deficiency in the water supply for winter was removed by abundant rain in November.

EXPLANATION OF TABLES.

The following tables contain statistics of temperature, rainfall, etc., for the year, and are compiled from data obtained by daily observations, made at 7 A. M., 2 P. M. and 9 P. M. T stands for "trace," less than 0.01 inch of daily rainfall. Temperature is given in degrees, Fahrenheit.

Table I shows the daily rainfall at the Station during the year in inches and hundredths.

Table II shows the daily mean temperature for 1891, and the normal mean temperature for each day, computed from nine years' record.

Table III gives a comparison of the monthly mean temperature, humidity and rainfall for the Station and the State, with the nine-year averages for the same.

Table IV contains the record of atmospheric pressure; the mean temperature; the highest and lowest temperature, with the range of temperature for each month; the number of clear, fair, cloudy and rainy days; the rainfall and prevailing direction of wind for both the Experiment Station and State.

Table V shows the rainfall at the Station for each month during the last eight years.

Table VI contains the principal points of interest on the temperature, state of weather, and rainfall during the same period, and a grand summary for eight years.

I am indebted to the Ohio State Meteorological Bureau for the daily normal temperatures in table II, and for the statistics on the weather of the State.

METEOROLOGY.—TABLE I.—DAILY RAINFALL AT THE OHIO EXPERIMENT STATION FOR 1891.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	.40	.18		T	.03	.21						
2.....	.09		.40	.24	T	.27		T				
3.....	T	.07	.30	.07	.09	.17	.61	.08				
4.....		.01		.21		.23	T		.19	.24		.37
5.....	T								.32	.01		
6.....	T		T	.05		.07			T			.22
7.....		.22	.03			1.24	1.92		T	T		
8.....			.18				.05		T		.01	
9.....	.10	.62	.11	.27							T	
10.....	.21					.27					.85	
11.....	.69		T	.08	.02	.06		.13			T	
12.....	.30		.05					.27			.09	
13.....	T		.17						T			
14.....				.33			.62	T		.06		.01
15.....		.71		T					.37		.13	.31
16.....		1.93						.20			.73	
17.....		.01				.51		.04			.27	T
18.....				.02			.33	.01		.72		
19.....		.10	.56		.03	.02			.03	1.62		
20.....		.46	.55		.45	.25		.02		.08		
21.....	.11	.25	.33	.40	.64	.25		.12		.03	.38	
22.....	.20		.02	.11	.54			T		.04	1.38	.10
23.....	T			.24	.70		.08	.89			1.70	.57
24.....		.13						.03				.48
25.....		.37										.01
26.....		.05	.38						.03		.04	.05
27.....			.33				.03	T			.02	
28.....	.17	.15	.06		.29		.14				.14	
29.....	.16				.08	.28	.08		.22		T	.30
30.....			.35	T		T	.55	.05				
31.....	.70		.57									
Totals...	3.13	5.26	4.38	2.02	2.87	3.83	4.41	1.84	1.16	2.80	5.74	2.42
Av daily rainfall..	.10	.19	.14	.07	.09	.13	.14	.06	.04	.09	.19	.08

METEOROLOGY—TABLE II.—DAILY MEAN TEMPERATURE FOR 1891.

[N. stands for Normal Mean Temperature for nine years.]

	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.	1891.	N.
1.....	51	33	44	44	48	44	44	44	57	47	65	63	68	73	72	75	64	67	62	60	40	47	34	31
2.....	23	24	42	44	31	44	44	44	52	46	62	64	71	73	71	74	65	67	68	58	44	46	30	30
3.....	22	24	13	43	20	37	43	43	50	58	65	66	66	73	67	71	66	67	70	56	38	48	53	34
4.....	23	26	32	30	16	30	30	30	51	60	63	67	73	73	70	71	60	67	68	55	38	43	41	42
5.....	23	29	36	36	17	26	32	42	44	58	61	67	66	73	72	72	62	67	60	40	45	44	34	34
6.....	21	27	37	38	28	31	32	42	42	58	69	68	74	74	72	69	61	68	51	33	47	46	48	34
7.....	22	24	35	36	28	31	36	44	50	67	63	68	74	74	71	71	57	66	48	53	47	47	34	36
8.....	31	25	42	43	33	33	48	48	63	62	72	70	68	71	80	73	67	67	49	53	53	51	33	37
9.....	35	24	38	38	34	38	53	46	68	63	72	68	71	72	86	71	63	65	46	54	56	46	38	37
10.....	36	26	32	32	37	39	53	46	61	69	74	69	74	74	73	72	69	67	50	54	51	45	35	36
11.....	26	28	36	36	31	35	51	51	52	60	68	68	74	74	73	72	68	67	47	55	53	41	35	38
12.....	27	26	30	33	16	30	50	53	59	58	73	72	73	73	68	70	60	63	43	51	55	38	33	35
13.....	28	28	41	38	30	35	57	53	62	69	73	74	68	74	69	70	62	66	41	47	46	39	34	31
14.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
15.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
16.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
17.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
18.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
19.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
20.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
21.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
22.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
23.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
24.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
25.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
26.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
27.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
28.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
29.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
30.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
31.....	27	24	59	36	36	36	57	54	56	74	74	76	73	73	73	71	72	66	51	54	50	39	35	30
Mean.....	32	26	36	31	35	35	50	50	57	61	71	70	69	73	70	70	66	64	60	50	40	40	39	32

METEOROLOGY.—TABLE III.—COMPARISON OF MEAN TEMPERATURE MEAN RELATIVE HUMIDITY AND RAINFALL FOR 1891.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean temperature at the Station.....	32°	38°	38°	52°	57°	71°	69°	70°	66°	50°	40°	39°	51°
Nine-year average temperature at the Station.....	26	31	35	50	61	70	78	70	64	50	40	32	50
Mean relative humidity at the Station.....	84%	79%	80%	75%	72%	78%	79%	82%	76%	75%	76%	76%	77%
Nine-year average humidity at the Station.....	88	86	81	76	77	79	76	78	78	80	82	83	81
Mean temperature for the State.....	38°	38°	35°	52°	58°	71°	69°	70°	67°	51°	40°	39°	52°
Nine-year average temperature for the State.....	27	31	35	50	60	69	78	70	64	51	41	33	50
Mean relative humidity for the State.....	85%	82%	82%	76%	73%	80%	76%	78%	77%	78%	77%	78%	78%
Nine-year average humidity for the State.....	83	82	79	73	74	77	74	75	77	79	79	81	78
Rainfall at the Station.....	Inches. 3.13	Inches. 5.26	Inches. 4.38	Inches. 2.02	Inches. 2.37	Inches. 3.88	Inches. 4.41	Inches. 1.84	Inches. 1.16	Inches. 2.80	Inches. 5.74	Inches. 2.42	Inches. 30.86
Nine-year average at the Station.....	3.09	3.95	3.15	3.01	5.00	3.57	2.58	2.82	3.40	2.55	3.16	2.48	30.96
Mean rainfall for the State.....	2.82	4.91	4.19	2.18	2.30	4.82	3.82	3.07	1.50	1.76	5.00	2.99	38.61
Nine-year average for the State.....	3.31	3.94	2.93	2.70	4.04	3.97	3.42	3.84	3.10	2.65	3.28	2.54	39.52

METEOROLOGY.—TABLE IV.—MONTHLY RAINFALL AT THE EXPERIMENT STATION FOR NINE YEARS.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1883	2.90	6.81	2.87	2.98	5.76	4.70	2.92	2.12	3.13	4.84	3.87	4.97	46.37
1884	2.77	6.29	4.10	2.40	4.34	1.11	2.23	0.45	4.23	1.49	1.13	3.87	38.41
1885	4.08	8.17	0.98	4.51	5.52	4.84	3.01	5.50	2.00	3.12	2.89	1.68	41.65
1886	4.49	1.67	2.83	3.25	6.91	2.23	3.01	1.42	3.42	1.19	4.16	3.41	38.01
1887	1.54	6.85	2.84	4.45	4.86	5.47	1.56	2.47	1.82	0.33	2.64	2.04	36.52
1888	4.04	1.71	4.33	2.39	6.67	2.43	4.72	5.86	1.26	5.14	4.80	1.38	44.20
1889	3.90	0.31	1.00	1.11	3.46	2.08	2.85	2.07	3.77	1.79	3.72	2.24	28.80
1890	5.50	5.88	4.88	4.08	4.69	5.43	1.41	3.71	3.16	2.71	1.76	2.38	50.59
1891	3.15	5.26	4.38	2.02	2.57	3.83	4.41	1.84	1.16	2.80	5.74	2.43	39.36
Average	3.69	3.95	3.15	3.01	5.00	3.97	2.88	2.82	3.40	2.65	3.16	2.71	30.95

METEOROLOGY.—TABLE V.—SUMMARY BY MONTHS FOR 1891.

Month.	Barometer.						Mean relative humidity.			
	Mean.	Highest.	Date.	Lowest.	Date.	Range.	Mean.	Mean.	Highest.	Date.
<i>At the Experiment Station.</i>										
January	30.09	30.69	8th.	29.31	1st.	1.38	84	82	57	29th.
February	30.03	30.56	14th.	29.43	25th.	1.13	79	88	69	20th.
March	30.03	30.63	1st.	23.55	21st.	1.08	60	85	43	15th.
April	30.03	30.39	9th.	29.60	2d.	0.79	75	62	38	17th.
May	30.09	30.35	7th.	28.82	2d.	0.53	72	57	33	10th.
June	29.94	30.16	5th.	29.56	18th.	0.60	78	71	91	25th.
July	30.03	30.27	10th.	29.79	18th.	0.48	78	69	89	22d.
August	30.01	30.24	25th.	29.71	1st.	0.53	82	70	94	*8.
September	30.15	30.46	10th.	29.94	3d.	0.52	76	66	93	*10.
October	30.12	30.53	28th.	29.70	4th.	0.83	75	50	86	*11.
November	30.12	30.70	18th.	29.23	23d.	1.47	73	40	70	9th.
December	30.16	30.66	12th.	29.58	4th.	1.06	75	39	61	15th.
Sums and averages.....	30.07	30.70	Nov. 13.	29.23	Nov. 23.	1.47	77	51	94	*14
<i>For the State.</i>										
January	30.09	30.74	8th.	29.16	1st.	1.58	85	33	65	31st.
February	30.07	30.62	14th.	29.32	25th.	1.30	82	86	30	20th.
March	30.08	30.69	1st.	29.45	18th.	1.24	82	35	74	18th.
April	30.04	30.42	9th.	29.58	2d.	0.84	76	52	95	17th.
May	30.10	30.39	7th.	29.76	2d.	0.63	73	58	93	10th.
June	29.96	30.27	5th.	29.65	19th.	0.62	80	71	98	*23.
July	30.03	30.35	10th.	29.72	18th.	0.63	76	69	95	22d.
August	29.99	30.25	25th.	29.60	20th.	0.65	73	70	101	10th.
September	30.14	30.46	16th.	29.83	3d.	0.58	77	67	99	19th.
October	30.14	30.58	28th.	29.65	4th.	0.93	78	51	93	2d.
November	30.12	30.79	18th.	28.89	23d.	1.90	77	40	76	9th.
December	30.16	30.72	18th.	29.43	4th.	1.29	78	39	66	3d.
Sums and averages.....	30.08	30.79	Nov. 13.	28.89	Nov. 23.	1.90	78	52	101	Aug. 10.

STATION—*1 March—7th, 20th, 22d and 27th. *2 April—13th, 17th, 26th and 27th. †3—2d and 4th.
 *8 August—9th and 10th. †9—7th and 8th. *10 September—20th and 21st. *11 October—2d and 3d.
 STATE—*15 January—1st and 3d. †16—4th and 11th. *17 February—8th, 10th and 19th. *18 March
 23d. *23 June—14th and 26th. *24 August—1st and 7th. *25 September—5th and 29th. *26 October
 22d; November 12th; December 4th.

METEOROLOGY.—TABLE V.—SUMMARY BY MONTHS FOR 1891.

Temperature.						No. of days.										
Lowest.	Date.	Range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Clear.	Fair.	Cloudy.	Rain fell.	Monthly rainfall.	Average daily rainfall.	Prevailing wind.		
13	7th.	44	12	80	2d.	3	18th.	4	9	18	11	3.13	.10	S. W.		
6	4th.	68	18	36	20th.	5	8th.	9	7	12	15	5.25	.19	S.		
-2	5th.	65	16	38	18th.	7	*1.	6	11	14	16	4.88	.14	N. E.		
24	7th.	59	22	36	*2.	8	†3.	13	9	8	11	2.02	.07	N. W.		
28	7th.	55	24	42	18th.	6	23d.	14	12	6	10	2.82	.09	N.		
52	*4.	89	22	35	†5.	9	7th.	10	12	8	18	3.88	.13	S.		
49	*6.	40	24	33	6th.	11	†7.	20	10	1	10	4.41	.14	S. E.		
43	29th.	51	24	33	†9.	11	28d.	9	18	4	11	1.84	.06	N. E.		
38	9th.	56	30	39	21st.	6	4th.	20	7	3	6	1.16	.01	S.		
21	28th.	65	26	43	17th.	8	9th.	17	8	6	8	2.80	.09	S.		
12	30th.	58	18	33	17th.	8	*12.	5	11	14	13	5.74	.19	S.		
15	19th.	46	21	35	21st.	7	*13.	15	5	11	10	2.42	.08	S.		
-2	March 5.	96	21	48	Oct. 17.	8	Jan. 18.	142	119	104	134	39.86	.11	S.		
3	8th.	62	10	39	*15.	2	†16.	8	8	20	11	2.82	.09	S. W.		
-2	5th.	82	18	44	20th.	3	*17.	5	9	14	12	4.91	.18	N. W.		
-6	5th.	79	17	45	18th.	2	*18.	7	6	18	14	4.19	.14	N. E.		
15	*19.	80	22	50	†20th.	3	†21.	12	9	9	8	2.13	.07	S. W.		
25	17th.	68	24	48	14th.	4	*22.	12	10	9	8	2.20	.07	N.		
40	5th.	68	22	45	14th.	3	16th.	15	15	14	13	4.82	.16	S. W.		
41	27th.	54	24	43	6th.	6	8th.	16	10	5	7	3.82	.12	S. W.		
39	29th.	62	22	41	*24.	3	23d.	13	11	7	10	3.07	.10	S. W.		
36	9th.	63	25	45	21st.	4	*25.	20	7	3	6	1.50	.06	S. W.		
20	28th.	73	23	48	29th.	3	*26.	10	9	12	10	1.76	.06	S. W.		
0	29th.	76	17	44	17th.	2	12th.	6	8	16	12	5.00	.17	S. W.		
9	18th.	57	18	43	12th.	2	4th.	14	7	10	9	2.39	.08	S. W.		
-5	March 5.	106	20	50	*27.	2	*28.	133	109	137	120	38.61	.11	S. W.		

*4 June—5th, 6th and 18th. †5—25th and 28th. *6 July—7th, 9th and 10th. †7—8th and 18th.
 *12 November—22d and 29th. *13 December—15th and 24th. *14 Average—August 9th and 10th.
 —19th and 22d. *19 April—5th and 6th. †20—27th and 30th. †21—2d and 11th. *22 May—16th and
 —7th and 19th. *27 Average—April 27th and 30th. *28—January 4th and 11th; March 19th and

METEOROLOGY.—TABLE VI.—SUMMARY BY YEARS AND GRAND SUMMARY FOR NINE YEARS.—Part First.

	1883.	1884.	1885.	1886.	1887.
<i>At the Experiment Station.</i>					
Mean relative humidity	82.3 per cent.	82.3 per cent.	81.2 per cent.	82.7 per cent.	79.2 per cent.
Mean temperature	40.1°	50.1°	47.4°	49.2°	50.8°
Highest temperature	97.0° August 22	97.0° August 20	101.0° July 21	97.5° June 4	102.5° July 17
Lowest temperature	7.0° January 12	—32.0° January 25	—20.0° Feb. 21	—12.0° Feb. 17	—10.0° Jan. 11
Range of temperature	104.4°	129.0°	121.0°	109.5°	112.5°
Mean daily range of temperature	22.9°	21.8°	23.1°	28.6°	24.1°
Greatest daily range of temperature	45° September 11	49.5° July 22	55.0° Feb. 2	48.0° Feb. 17	47.5° Sept. 6
Least daily range of temperature	15° January 28	4.0° Feb. 22	4.0° Dec. 10	5.0° Feb. 7	8.0° Dec. 12
Number of clear days	106	103	88	107	98
Number of fair days	147	119	137	145	180
Number of cloudy days	118	144	145	145	137
Number of days rain fell	118	149	166	154	158
Total rainfall	46.97 inches	83.41 inches	41.65 inches	88.01 inches	86.62 inches
Mean daily rainfall	0.127 inch	0.091 inch	0.114 inch	0.104 inch	0.100 inch
Greatest monthly rainfall	5.81 inches, Feb.	5.29 inches, Feb.	5.92 inches, May	6.91 inches, May	6.85 inches, Feb.
Least monthly rainfall	2.12 inches, Aug.	0.45 inch, Aug.	0.98 inch, March	1.19 inches, Oct.	0.38 inch, Oct.
Warmest day of year	82.7° July 23	80.5° July 28	86.8° July 31	81.9° July 29	87.0° July 17
Coldest day of year	1.0° Jan. 22	—16.8° Feb. 6	—4.0° Feb. 10	—5.05° Jan. 10	0.6° Jan. 10
Prevailing direction of wind	N. W.	S. W.	S. W.	S. W.	S. W.
<i>For the State.</i>					
Mean relative humidity	76.8 per cent.	76.8 per cent.	77.5 per cent.	77.8 per cent.	75.8 per cent.
Mean temperature	49.4°	50.6°	49.0°	48.0°	51.0°
Highest temperature	88° August 22	90.0° Sept. 28 and Oct. 1	101.0° July 21	98.0° July 7	108.0° July 18
Lowest temperature	17.2° Jan. 22	18.0° Jan. 25	12.0° Jan. 25	21.0° Jan. 12	—21.0° Jan. 7
Range of temperature	115.8°	138.0°	122.0°	131.0°	129.0°
Mean daily range of temperature	18.8°	20.0°	20.4°	20.8°	21.2°
Greatest daily range of temperature	35.2° March 18	36.0° Sept. 6 and Dec. 4	36.8° Jan. 30	37.0° Dec. 11	37.0° April 11
Least daily range of temperature	0.5° December 24	1.1° Feb. 6	1.0° Apr. 18 and Dec. 31	1.1° March 27	1.0° Jan. 15 and Apr. 14
Average number of clear days	98.2	116.7	103.5	118.4	118.8
Average number of fair days	185.4	183	182.3	125.7	127.3
Average number of cloudy days	180.4	181.1	182.2	121.0	123.9
Average number of days rain fell	146.0	145.0	130.7	120.9	120.9
Mean yearly rainfall	41.93 inches	40.19 inches	38.08 inches	36.71 inches	33.61 inches
Mean daily rainfall	0.123 inch	0.110 inch	0.103 inch	0.100 inch	0.092 inch
Prevailing direction of wind	S. W.	S. W.	S. W.	S. W.	S. W.

METEOROLOGY—TABLE VI.—*Part second.*

	1888.	1889.	1890.	1891.	Summary for nine years.
<i>At the Experiment Station.</i>					
Mean relative humidity.....	82.8 per cent.	79.8 per cent.	78.5 per cent.	77 per cent.	81 per cent.
Mean temperature.....	49.6°	51.2°	52.3°	51°	50°
Highest temperature.....	98.0°, June 21.	93.0°, Aug. 31 and Sept. 1.	93.0°, July 8 and 15.	94° Aug. 9 and 10.	102.5°, July 17, 1887.
Lowest temperature.....	-11.0°, Jan. 28.	1.0° Feb. 22.	4.0° March 6.	-2° March 5.	-32° January 25, 1884.
Range of temperature.....	109.0°	92.0°	91.0°	96°	124.5°
Mean daily range of Temp.....	21.1°	20.8°	19.1°	21°	22°
Greatest daily range of Temp.....	43.5°, April 23.	41.0°, April 23.	41.0°, January 13.	43° Oct. 17.	55° February 2, 1886.
Least daily range of Temp.....	4.1°, Aug. 21.	3.0° Jan. 6 and Nov. 20.	2.0°, December 17.	8°, Jan. 18.	1.8° January 28, 1883.
Number of clear days.....	96.	124.	116.	142	108.
Number of fair days.....	141.	118.	126.	119	131.
Number of cloudy days.....	129.	128.	125.	114	128.
Number of days rain fell.....	142.	163.	163.	134	155.
Total rainfall.....	44.20 inches.	28.50 inches.	50.59 inches.	39.94 inches.	39.95 inches.
Mean daily rainfall.....	0.120 inches.	0.079 inch.	0.139 inch.	0.11 inch.	0.11 inch.
Greatest monthly rainfall.....	6.67 inch May.	3.90 inches in January.	8.16 inches in Sept.	6.74 inches in Nov.	8.16 in. in Sept. 1890.
Least monthly rainfall.....	1.26 inches, Sept.	0.81 inch in February.	1.41 inches in July.	1.16 inches in Sept.	0.38 inch in Oct. 1887.
Warmest day of year.....	84.1° June 20.	80.5° July 9.	86.1°, July 30.	86° Aug. 10.	87° July 17, 1887.
Cooldest day of year.....	7.5° Feb. 9.	4.9° February 28.	12.8° March 6.	12° Feb. 4.	-16.8° Feb. 6, 1884.
Prevailing direction of wind.....	S. W.	S. W.	S.	S.	S. W.
<i>For the State.</i>					
Mean relative humidity.....	78.2 per cent.	79.4 per cent.	80.2 per cent.	78 per cent.	78 per cent.
Mean temperature.....	49.5°	51.1°	52.4°	52°	50°
Highest temperature.....	102.0°	99.5°, August 31.	101.1°, August 3.	101° Aug. 10.	103° July 18, 1887.
Lowest temperature.....	-15.0°, Jan. 27.	-13.5°, February 24.	-4° March 7.	-5° March 6.	-34° Jan. 25, 1884.
Range of temperature.....	117°	118.0°	107.1°	108°	140°
Mean daily range of Temp.....	19.6°	19.3°	19°	20°	20°
Greatest daily range of Temp.....	50°	53.0°, March 30.	49.5°, April 11.	50° April 27 and 30.	58.5° Jan. 30, 1886.
Least daily range of Temp.....	1.2° Jan. 16.	1.0° January 6.	1.0°, December 17.	2°	0.5°, Dec. 23, 1883.
Average number of clear days.....	128.4	112.8	108.4	133.	112.
Average number of fair days.....	133.9	138.4	121.6	109.	123.
Average number of cloudy days.....	124.7	114.8	140.3	137.	131.
Average number of days's rain fell.....	89.64 inches.	33.3 inches.	50.3 inches.	38.61 inches.	39.52 inches.
Mean daily rainfall.....	0.08 inch.	0.092 inch.	0.13 inch.	0.11 inch.	0.11 inch.
Prevailing direction of wind.....	S. W.	S. W.	S. W.	S. W.	S. W.

January 4 and 11; March 19 and 22; November 12, and December 4.

NOTES ON THE WEATHER AT THE STATION.—SUMMARY BY MONTHS.

JANUARY.

The mean temperature was 32°, 4° above the Station average for January. The highest temperature, 57°, occurred on the 29th; the lowest, 18°, on the 7th.

The mean relative humidity was 84 per cent. Cloudy weather prevailed. Rain fell on nine days and snow on eight, on five of the latter, however, only a trace fell. The total snowfall for the month was 5.50 inches; the total rain and melted snow, 8.13 inches, which is .56 inch below the Station average for January. The greatest daily rainfall was .70 inch, on the 31st.

Fogs occurred on the 1st and 10th.

The prevailing wind was south-west.

FEBRUARY.

The mean temperature was 36°, 5° above the Station average for February. The highest temperature, 69°, occurred on the 20th; the lowest, 6°, on the 4th.

The mean relative humidity was 79 per cent. Cloudy weather prevailed. Rain fell on twelve days and snow on five. The total snowfall for the month was 2.20 inches; the total rain and melted snow, 5.26 inches, which is 1.31 inches above the Station average for February. The greatest rainfall in 24 hours was 2.60 inches on the 15th and 16th.

Thunder was heard in connection with rain on the 9th and 25th.

A lunar halo occurred on the 21st.

The prevailing wind was south.

MARCH.

The mean temperature was 35° which is the Station average for March. The highest temperature, 68°, occurred on the 18th; the lowest, —2°, on the 5th.

The mean relative humidity was 80 per cent. Cloudy weather prevailed. Rain fell on fourteen days and snow on four. The total snowfall was 8.50 inches; the total rain and melted snow 4.38 inches, which is 1.23 inches above the Station average for March. The greatest rainfall in 24 hours was .91 inch on the 30th and 31st.

A killing frost occurred as late as the 29th.

A solar halo occurred on the 18th; lunar halos on the 18th and 24th.

A fog occurred on the 8th.

The prevailing wind was north east.

APRIL.

The mean temperature was 52°, 2° above the Station average for April. The highest temperature, 88°, occurred on the 17th; the lowest, 24°, on the 7th.

The mean relative humidity was 75 per cent.

Clear weather prevailed. Rain fell on ten days and snow on one. The total snowfall for the month was .50 inch; the total rainfall, 2.02 inches, which is .99 inch below the Station average for April. The greatest daily rainfall was .40 inch on the 21st. Only a trace of rain fell after the 23d.

Thunder storms occurred on the 9th, 21st and 23d.

Killing frosts occurred on the 7th and 8th; light frosts on the 9th, 25th, 26th, and 29th.

Lunar halos occurred on the 17th and 18th.

The prevailing wind was north-west.

MAY.

The mean temperature was 57°, 4° below the Station average for May. The highest temperature, 83°, occurred on the 10th; the lowest, 28°, on the 7th.

The mean relative humidity was 72 per cent.

Clear weather prevailed. Rain fell on ten days. The total rainfall for the month was 2.87 inches, 2.13 inches below the Station average for May. Nearly all of this fell during the latter half of the month. The greatest rainfall in 24 hours was 1.24 inches on the 22d and 23d.

Thunder storms occurred on the 21st and 22d.

Killing frosts occurred on the 5th, 7th, and 17th; light frosts on the 4th, 12th, and 18th.

The prevailing wind was north.

JUNE.

The mean temperature was 71°, 1° above the Station average for June. The highest temperature, 91°, occurred on the 26th; the lowest, 52°, on the 5th, 6th and 13th.

The mean relative humidity was 78 per cent.

Fair weather prevailed. Rain fell on thirteen days. The total rainfall for the month was 3.83 inches, .26 inch above the Station average for June. The greatest rainfall in 24 hours was 1.27 inches on the 6th and 7th.

Thunder storms occurred on the 1st, 2d, 8d, 4th, 10th, and 29th.

A lunar halo occurred on the 15th.

The prevailing wind was south.

JULY.

The mean temperature was 69°, 4° below the Station average for July. The highest temperature, 89°, occurred on the 22d; the lowest, 49°, on the 7th, 9th, and 10th.

The mean relative humidity was 73 per cent.

Clear weather prevailed. Rain fell on ten days. The total rainfall for the month was 4.41 inches, 1.53 inches above the Station average for July. The greatest rainfall in 24 hours was 1.97 inches on the 7th and 8th.

Thunder storms occurred on the 8d, 7th and 14th.

The prevailing wind was south.

AUGUST.

The mean temperature was 70°, which is the Station average for August. The highest temperature, 94°, occurred on the 9th and 10th; the lowest, 43°, on the 29th.

The mean relative humidity was 82 per cent.

Fair weather prevailed. Rain fell on eleven days. The total rainfall for the month was 1.84 inches, which is .98 inch below the Station average for August. The greatest rainfall in 24 hours was .92 inch on the 23d and 24th.

A thunder storm occurred on the 11th.

A fog occurred on the 25th.

The prevailing wind was north-east.

SEPTEMBER.

The mean temperature was 66°, 2° above the Station average for September. The highest temperature, 93°, occurred on the 20th and 21st; the lowest, 38°, on the 9th.

The mean relative humidity was 76 per cent.

Clear weather prevailed. Rain fell on six days. The total rainfall for the month was 1.16 inches, 2.24 below the Station average for September. The greatest rainfall in 24 hours was .50 inch on the 4th and 5th.

Thunder storms occurred on the 15th and 19th.

A fog occurred on the 18th.

The prevailing wind was south.

OCTOBER.

The mean temperature was 50°, which is the Station average for October. The highest temperature, 86°, occurred on the 2d and 3d; the lowest, 21°, on the 28th.

The mean relative humidity was 75 per cent.

Clear weather prevailed. Rain fell on eight days. The total rainfall for the month was 2.80 inches, .25 inch above the Station average for October. The greatest rainfall in 24 hours was 1.84 inches on the 18th and 19th.

Killing frosts occurred on the 12th, 13th, 16th, 23d, 28th and 29th; light frosts on the 10th, 11th, 15th, 21st, 24th and 25th.

The prevailing wind was south.

NOVEMBER.

The mean temperature was 40°, which is the Station average for November. The highest temperature, 70°, occurred on the 9th; the lowest, 12°, on the 30th.

The mean relative humidity was 78 per cent.

Cloudy weather prevailed. Rain fell on twelve days, and snow on four. On three of the latter, however, only traces of snow fell. The total snow fall was 2.00 inches; the total rainfall, 5.74 inches, which is 2.58 inches above the Station average for November. The greatest rainfall in 24 hours was 1.96 inches on the 22d and 23d.

Thunder was heard in connection with rain on the 8th and 23d.

Numerous killing frosts occurred.

A fog occurred on the 6th.

The prevailing wind was south.

DECEMBER.

The mean temperature was 39°, 7° above the Station average for December. The highest temperature, 61°, occurred on the 15th; the lowest, 16° on the 19th.

The mean relative humidity was 75 per cent.

Clear weather prevailed, the sky being not more than three-tenths obscured on fifteen days. Rain fell on ten days. Enough snow to measure fell on one day only, traces on three other days. The total snowfall was only .20 inch; the total rain and melted snow 2.42 inches, which is .29 inch below the Station average for December. The greatest rainfall in 24 hours was .61 inch on the 23d and 24th.

A fog occurred on the 12th.

Numerous white frosts occurred.

The prevailing wind was south.

W. C. BAKER,
Meteorologist.

ANNUAL REPORT
OF THE
Board of Live Stock Commissioners
OF THE
STATE OF OHIO,
FOR THE
YEAR ENDING NOVEMBER 15, 1891.

LIVE STOCK COMMISSION OF OHIO.

T. P. SHIELDS, <i>M. D.</i> , <i>President</i>	Watkins, O
O. P. GOODMAN.....	_____
D. N. KINSMAN, <i>M. D.</i> , <i>Secretary</i>	Columbus, O

4 A Appendix

ANNUAL REPORT.

COLUMBUS, O., *December 14, 1891.*

The Hon. JAMES E. CAMPBELL, Governor of Ohio:

SIR: The Live Stock Commission of Ohio beg leave to submit the following report of their work for the year ending November 15th, 1891:

At its last session the Legislature of Ohio modified previous legislation so as to conform to that of the United States government.

The trade in Southern cattle at some points in Ohio is very large. Notably at Cleveland.

The law previous to 1891 forbade the unloading of cattle from the scheduled districts at any point in Ohio, except for feeding and watering in special pens, to be used exclusively for Texas cattle.

Nevertheless, parties were constantly violating the law in the interests of commerce; moreover, it was ruinous to the business of many. Under the law, as it now exists, cattle from the scheduled districts may be unloaded from the cars into pens connected with the slaughter-houses, whence they are not to be removed except to the shambles.

At Cleveland and Toledo the butchers engaged in this traffic have fully complied with the law, under advice and direction of this Commission—and we have had no cases of infection from those points.

From the stock yards at Cincinnati many cases of infection have occurred.

As far as the knowledge of the Commission extends, cattle from the scheduled districts have not been seen in the State, outside the markets of the large cities, except at Ashtabula and Newark.

There was a question about two car loads which were received in Columbus early in the season.

A point of greater interest is the neglect of parties receiving Texas cattle to disinfect the cars in accordance with our State laws and those of the United States.

The cattle which have died from Texas fever at Cincinnati, Middletown, Springfield and Wellington have been high grade native cattle, evidently infected in pens or cars which have been used in their transportation, without regard to disinfection.

The sources of these outbreaks have been traced to Cincinnati, Chattanooga and Buffalo.

The maintenance of an efficient quarantine and disinfection of cars is a subject of the greatest importance to the cattle trade.

In summing up, Texans communicated the disease at Newark; all other cases are believed to be traceable to foul pens or cars.

Comparatively few cases of scabs, glanders, and other infectious diseases have come under the purview of this Board during the year, all of which will be reported by Dr. Moore, who personally visited and inspected many of the cases.

Last year the Board installed a small laboratory and entered upon the systematic culture of the microbes which are believed to be the cause of hog cholera.

Inoculations have been made with these cultures. The details of these operations will be fully given in the report of Dr. Moore, together with the results.

The question of the successful preventive inoculation of hogs against hog cholera is still *sub judice*. We believe it to be practicable, although the results secured by our Commission have not been such as we had hoped. They have been carried on vigorously and are so far at least encouraging.

Some authorities believe the question is solved. Our studies have been independent of all others, and while our success is not equal to that obtained by others, every step of our way has been fully and honestly tested.

This work is the most important which has so far engaged the attention of this Commission, and it will be pursued during the coming year. The success or failure of our process can only be tested on hogs. The protective influence of an inoculation can only be ascertained by a prolonged exposure of the inoculated animals to the most active sources of the contagion—among dying herds and in infected fields.

Suspecting that inoculated animals infected one field so that unprotected animals placed therein the following year nearly all died from hog cholera, we can not wonder that hog breeders are averse to exposing their herds to these experiments.

Hogs can be and have been inoculated—are they or can they be protected so they will invariably resist the operation of an intense focus of infection?

This is the question which we are endeavoring to solve.

Very respectfully,

THOS. P. SHIELDS,
O. P. GOODMAN,
D. N. KINSMAN.

REPORT OF DR. MOORE.

COLUMBUS, O., *December 14, 1891.*

To the Board of Live Stock Commissioners of the State of Ohio:

GENTLEMEN: On Friday January, 10th, 1891, I went to Mt. Gilead to make inquiries in regard to a reported outbreak of hydrophobia. On December 16th, 1890, Mr. C. H. Wood, of Mt. Gilead, wrote to the Hon. T. C. Jones, late President of your Board, notifying him of the trouble, and Judge Jones referred the matter to the Secretary. It seems that about the middle of September, 1890, a so-called mad dog made his appearance in the neighborhood of Mt. Gilead, and is said to have bitten several dogs and some farm stock. I found that three cows, eight hogs and one horse—about the latter there seemed reasons for doubt—had been bitten by this dog or by dogs, which he is said to have infected. Of the various owners of these animals I was only able to meet Mr. Geo. Eccles, who gave me the following statement with regard to his own stock. Two cows and one hog were bitten. The hog died in eighteen or nineteen days and one of the cows on the twentieth or twenty-first day. The other cow was being milked at the time of the infection and she was not dried off for about two months, during all of which time she showed no symptoms such as the other cow had had. But within three or four days after the cessation of milking, she presented the same symptoms as the other cow and promptly died. The pigs which were being fed on her milk, during the use of that milk, were in perfect health and so continued. Mr. Eccles gave, as his recollection, the statement with reference to the death of the other seven hogs, and also said that he doubted strongly whether the horse mentioned above died of rabies, although the owner claimed such to be the fact.

On February 12th I went to Blanchester to meet Mr. B. F. Jones, to see his sheep. I found about one hundred and twenty-five blooded sheep in a most pitiable condition with scab. Proper treatment was advised and the sheep quarantined for sixty days.

On March 10th I went to Haydenville to meet Mr. H. W. Stiers. A year ago last spring Mr. Stiers lost several horses in an unusual way and from an unrecognized cause. Death was supposed to have been caused by feeding ensilage of corn, which, in 1889, had been made from corn

grown on low land and which had been overflowed in June of that year and badly smutted. Last autumn (that of 1890) the ensilage was made from corn which was in perfect condition. Several of Mr. Stiers' horses were sick, presenting the same symptoms as the year before, but none died. One mule, however, died, and Mr. Stiers thinks that it may have gotten more than its fair share of the ensilage—more than was meant for it. Mr. Stiers wrote to the Secretary of the State Board of Agriculture, and the letter being referred to me, I started for Haydenville on March 9th, but was unable to reach my destination until the next day, on account of a washout on the road. Meantime, Mr. Stiers had himself opened the mule, finding the abdominal and thoracic organs normal, as he supposed, and also that the region of the upper throat and the root of the tongue were much inflamed and swollen. Having made his examination, he buried all the parts as he supposed, pending my arrival. But unfortunately the head and neck were overlooked, and when I got to the farm, the only organs which had presented to Mr. Stiers any evidence of disease, had been devoured by dogs. And as it was raining in torrents and the grave was a quarter of a mile from shelter, I did not exhumate the body.

On March 25th I went to Milford Center to meet Dr. J. Q. Taylor, of Marysville, and went with him to see some sheep on the farm of Mr. Peter Gaze. The sheep had all been bought for breeding and no sheep had been raised on the farm for several years. Quite a number of sheep had died and a large part of the flock were sick. The sheep were of course almost all ewes and many of them quite aged. Mr. Gaze kindly permitted the killing of an old ewe for examination. The intestines were found to be closely studded with tumors varying in size from a split pea to a hazel nut, the results of the encysting of an intestinal worm—*Æsophagostoma Columbianum*. I know nothing and have had no opportunities to learn as to the prevalence of this form of parasitic disease in Ohio. It is said to be so prevalent in some parts of the south as to make sheep raising almost entirely unprofitable, and in some places to make it practically impossible.

On May 25th I went to Apple Creek, Wayne County, in response to a complaint that a farmer in the neighborhood of that village was violating the laws in regard to the care of sheep affected with scabies. I found the sheep in the very best condition, with no suspicion of scab.

On May 26th I met Dr. Taylor, at Marysville, and went with him to see an autopsy on a horse, at a farm between Milford Center and Marysville. Dr. Taylor has kindly furnished me with the following facts in regard to this case and several of an apparently like nature which preceded it. He says: "The first case to which my attention was called

died June 7th, 1887, the second September 8th, 1888, the third October 10th, 1888, the fourth June 24th, 1890, the fifth August 29th, 1890, the sixth September 8th, 1890, the seventh May 25th, 1891. I think that four others died during this time which I did not see. Their ages ranged from one year old to twelve, and were all bred on the place, from imported French stallions. After the death of No. 6, September 8, 1890, I insisted on the removal of the barn, and also that the use of the old well for watering the horses should be discontinued. This was done, and the only death since was that of the horse the autopsy upon which you saw. She was the last of the old stock. All the horses upon the farm now have been purchased within the last nine months, and I am happy to say that they are all in fine health."

The disease in all these horses had been obscure and nothing satisfactory had been elicited at the numerous post mortems. In this case I called Dr. Taylor's attention to the condition of the anterior mesenteric artery. A fusiform aneurism, about five inches long, was found and the parasite, *Strongylus Armaus*, which causes the aneurism, was found in large numbers, the largest specimen being about two cm. in length. This form of parasitic disease is exceedingly common in Europe, the number of horses which are affected with it in Germany and Russia being said to be from eighty-five to ninety per cent.

The disease is quite uncommon, or at least has very seldom been recognized in this State as yet. Dr. J. C. Meyer, Jr., of Cincinnati, told me a few days ago that he had never seen it at an autopsy and his father but once in a long practice. It is believed that the parasite is propagated and spread in the manner usual to intestinal parasites, and this will explain why several horses have had the disease at this one farm. It is not likely that the disease is one of very rapid spread, nor is it satisfactorily explained how the aneurism kills. It is certainly very curious that the parasite should always choose the first few inches of the anterior mesenteric artery for its abode, and no other vessel.

On August 6th I went to Williamsburg, Clermont county, to see some sheep belonging to Mr. Ezra Chatterton, who made the following statement. In 1887, Mr. Chatterton had four lambs which were taken sick and three of them died. A neighbor had the same trouble that year, but Mr. Chatterton could give no figures. In the outbreak mentioned above, the lambs died in three or four days. This year the first sheep was taken sick about the middle of July. Three sheep were dead by the time I got to Williamsburg and several were sick. Temperatures of four sheep were taken, and were as follows: F. 104.5°, 103.8°, 104.4°, 105.2°. This last sheep, being the one most seriously affected, was killed for

autopsy. [See autopsy No. 18.] I should doubt whether the diseases of 1887 and of this year were identical.

Mr. Chatterton thought that the symptoms were the same, but the great difference in the duration of the illness—three or four days in 1887, two or three weeks this year—would hardly seem to point to the same year.

On August 18th I went to Cincinnati to inspect the stock yards with respect to the facilities at the yards for complying with the laws of the United States and of Ohio in the matter of handling southern cattle. The arrangements for feeding and watering cattle *in transitu* from the scheduled district were not such as to comply with the requirements of your Honorable Commission, and there were no facilities whatever for the immediate slaughter of such cattle, in the sense of that term contemplated by the law.

On August 25th I went to Newark to make inquiries as to the handling of Texans there. This inquest was provoked by an outbreak of Texas fever among native cattle feeding on pasture after a lot of southern cattle, which had been brought to Newark by a firm of butchers in that city. There are absolutely no facilities in Newark for the lawful handling of cattle from the scheduled district. The head of this butcher firm was most densely ignorant in the whole matter, and peculiarly enough, knew less about the affair when I questioned him than he did a few days before Dr. Hillock talked with him. However, he made pecuniary satisfaction to the owners of the native cattle so destroyed, without the trouble of a law suit.

On September 8th I went to New Paris in response to a request from a farmers' club of that neighborhood, to locate the source of the almost annual visitations of hog cholera, and to advise as to checking its spread. After a search, which reminded me of the stories of the efforts to locate the milk sickness in the early days of the settlement of this part of the country. I found the cholera not "in the next county," but in the next State. The actually existing cholera was over the line in Indiana. In that neighborhood the hog cholera seems to be enzoötic. At least there has not been a period of twelve months in the last twenty five years which passed without its outbreak. And the time of year seemed to have absolutely no bearing on its eruption. I judge from what some of the Indiana farmers told me that it was quite as common to find hogs sick and dying in the winter and spring as in the late summer and autumn. This neighborhood over in Indiana is badly drained. One might almost say swampy, although lying quite high. The little stream which virtually loses itself in this swampy plateau rises on the Ohio side of the line. And it is up the valley of this stream that the disease spreads when it invades Ohio. I

do not wish to be understood as saying that the stream carries the disease up. Of course not. The spread of the hog cholera down a valley is usually very rapid, the disease seeming to appear simultaneously in all the herds having access to the stream. The spread of infection up a valley can of course only be by means other than the stream itself, such as by buzzards, dogs, broken fences, carelessness in visiting sick swine, etc. The last news I had from New Paris was that the disease was slowly working its way up the valley. The advent of cold weather, and the sale of hogs at this season will probably prevent any serious loss.

On October 9th I went to Findlay to learn the facts in regard to a reported outbreak of hog cholera in the southern part of Hancock county. After a long drive I got into the township in which the disease was said to be, but could not find it. With one solitary exception where I found one sick hog, the disease was at the last farm at which I had stopped, or at the next one up the road.

On October 10th I went to Springfield and found a good deal of cholera about six miles south-west of that city.

On October 29th, with the President and Mr. Goodman of your Board, I went to Cincinnati to see some cattle which were in quarantine at the stock yards, being sick with Texas fever.

And again on November 4th I went to Cincinnati to see autopsies on two of the steers which had died. These cattle had been shipped from Chattanooga, having been driven thither from Sweet Gum, Van Buren county, Tennessee. Although, in general, southern cattle are not liable to death from Texas fever, the actual northern boundary of the Texas fever area shifts many miles each season, depending on the severity of the winter, it is evident that these cattle, although coming from south of the legal line, were infected in Chattanooga or in the cars used in their transportation. Up to November 4th thirty-one out of fifty-six had died, notwithstanding the fact that a Cincinnati veterinarian had dehorned all the survivors in the belief that that operation was an infallible preventive of further infection.

On December 8th I went to Mt. Victory, Hardin county, to inoculate forty-two pigs for Mr. G. W. Gill, of this city. A year ago last September Mr. Gill had inoculated some sixty head, in a small field in which they were kept for some weeks. This last September one of Mr. Gill's tenant farmers put twenty-three pigs into this field. At the end of two weeks all the pigs were taken sick, three died in a few days, and the rest were sold off.

No one of the farmers on the place has been there more than two years, so that it can not be ascertained whether there had been hog cholera in that field at any time within the last half dozen years. Therefore, it can not be said that the infection of the field was brought about by the

inoculations of last year. This much seems certain however, that the pigs were infected in that field.

On Saturday, December 12th, I went to Milford Center and was kindly driven, by Dr. J. L. Boylan, out to the farm of Mr. James Connor. On the Saturday before, December 5th, Mr. Connor noticed that a bunch of fifty-one fat hogs, averaging two hundred weight, did not come up to feed as eagerly as usual. On Tuesday, the 8th, three died. On Thursday he buried sixteen which had died since Wednesday night. While he was putting the bodies into the trench, one pig which seemed in perfect health and activity, climbed part way down into the hole and tried to eat the snout of one of the dead hogs. The noise made by his teeth striking the ring attracted the attention of Mr. Connor, and he drove the pig away. Twice this happened, yet before the trench was filled up this pig was dead. The last of the fifty-one died Saturday morning early and was still warm when I made the autopsy. [See No. 28.] Five or six pigs which had died since Friday noon were lying around. The white pigs among them showed the most intense lesions of the skin I have ever seen. In one case the whole body was of a dusky red color, and in all the ears were very red and soggy, the bodies being covered more or less closely with large reddish-purple patches. No explanation could be devised as to the method of infection, it being Mr. Connor's idea that perhaps quail hunters had carried infected soil on their boots into his pen.

During the year members or officers of this Board visited Toledo, Cleveland, Belpre, Dayton, Springfield, Cincinnati and Newark, looking after the handling of cattle from the scheduled districts. It is known that at Toledo and at Cleveland the stock yards have complied with the requirements of the law in setting apart pens for the special use of Texans, and it is believed that at both places great care is constantly taken to obey the law. At Cincinnati there were at the first of November no facilities whatever for the immediate slaughter of Texans, within the contemplation of the law, and the facilities for feeding and watering Texans *in transitu* were, at that date, by no means of such character as to comply with the requirements of this Board. The handling of cattle from the scheduled district at Cincinnati should be strictly forbidden until such time as the yards and the slaughter-houses present such arrangements as will satisfy an inspecting officer from this Board.

Two placarded cars were found at Ashtabula this year.

Two car loads from the scheduled district, in cars not known to have been placarded, turned up in Columbus, but fortunately no infection took place.

The case at Newark has been referred to.

An outbreak occurred near Springfield among natives bought at the Cincinnati stock yards, and which must either have been infected there or in the cars. There were two car loads of these cattle and five died.

Deaths occurred among fat cattle at Wellington, which had been bought at Buffalo, N. Y., and which must have been infected there or in the cars.

The danger and the damage in this disease occur through the carelessness or willfulness of stock yards and railroad companies.

After a prolonged series of culture experiments in the laboratory, in the endeavor to procure an attenuation of the hog cholera germ, on June 26th, at Kingston, Ross county, I commenced experiments in preventive inoculation in pigs. On that day three pigs were given subcutaneous injections of the culture, in amounts varying as follows: No. 1 received two c. c., No. 2, four c. c., No. 3, six c. c. On July 3d, three more pigs received injections of 3 c. c. each. On July 11th these six pigs received their second injection of 3 c. c. each, of a culture further back towards the original bouillon culture. The animals were not off their feed, coughed very little and gave doubtful evidences of eruption, except in one case. There were considerable enlargements of the inguinal glands and temporary swellings at the sites of the injections. One pig of the second three was killed for examination. [See autopsy No. 15.] On July 24th the first three pigs were sent to the farm of Mr. J. W. Rittenour, near Kingston. Mr. Rittenour had had a bunch of pigs in his orchard, cholera broke out among them and they were nearly all dead when my three pigs were put among them. The orchard is on a hillside and the wash runs into an open drain or ditch, which makes quite a pool at the corner of the lot. At my request Mr. Rittenour removed the fence so that my pigs could get at this water, which, as it was quite still must have contained an immense number of cholera germs. Pig No. 3 is known to have eaten of the remains of dead cholera hogs. On August 7th, two of the pigs, Nos. 1 and 2, first showed symptoms of illness. No. 1 died August 9th. I was unable to go down to make an autopsy. I saw No. 2 August 12th, it being then in a dying condition. The autopsy was held August 13th. [See autopsy No. 21.] The other pig, No. 3, never showed any symptoms of disease, and is now and has been all this time perfectly well. On August 10th the remaining two pigs were taken to the farm of Mr. Reuben May. The type of the disease on this farm was as severe as any I have seen. A large number of pigs had been sick and dying in and around a small pond, which was the water supply for the pigs. One of my inoculation pigs died about August 31st; no autopsy was made. The other was slightly sick for a few days and made a good recovery and is now perfectly well.

On July 27th Mr. Rittenour very kindly put at my disposal seven pigs and two weeks later six more. On July 27th these seven pigs received their first injection. On August 7th these seven were given their second dose, and the six new ones their first. As the thirteen pigs were together when I gave the last six their second dose, I gave the first seven a third. One of the lot of seven died after his third dose, and two of the lot of six died after their second, as the result of the inoculations; and they died of hog cholera as the necropsies of two of them unmistakably showed. To each of the last six and to two of the first seven a large quantity of the culture was given with the purpose of determining the upper limit of the dose, and too large a dose was given. About the end of September the ten remaining pigs were exposed, being put into an orchard adjacent to the one described above, and quite as badly infected. One pig was taken sick and promptly died with all the appearances of hog cholera. No autopsy was made, and it was not noted to which lot this pig belonged.

Again, Mr. Rittenour gave me nine pigs on September 29, and on October 13 ten more. These nineteen pigs have undergone their inoculations, this time with no fatalities, and are now ready for exposure. These thirty-eight pigs were inoculated with cultures from the same source.

On August 11th inoculations were begun on fifteen pigs at Milford Center. These pigs were Chester Whites. The first injections were made on August 11th, and the source of the cultures was different from that of the cultures used in the experiments at Kingston, given above. Previous to injection the temperature of each pig was noted. The readings for the first few pigs were from 103.2 F. to 103.6; the temperature of the last pig caught was 107.1, and the rise was very rapid from the tenth or eleventh pig to the last; due I suppose to the excitement caused by the efforts to catch the pigs in a quite large pen. These fifteen pigs were given six cubic centimeters each of the culture.

On August 27th the second injections were made, temperature readings taken and condition of site of previous injection observed.

Number.	Dose in c. c.	Temperature F.	Notes.
20.....	6	107.	Coughs badly.
21.....	6	105.	.....
22.....	6	107.5	.....
23.....	6	105.4	.....
24.....	5	106.8	.....
25.....	6	107.	Large swelling.
26.....	3	107.7	.....
27.....	3	107.8	.....
28.....	3	108.8	Large swelling.
29.....	3	107.3	.....
30.....	3	106.6	.....
31.....	3	107.8	Large swelling.
32.....	3	106.6	.....
33.....	3	107.	.....
34.....	3	108.2	Large swelling.

Average temperature on August 27th, 107.1°.

In every case there were marked enlargements of the inguinal and axillary glands.

On September 3d thermometer readings were made as follows :

No.	Tem. F.	No.	Tem. F.
20.....	105.7	28.....	104.8
21.....	104.8	29.....	105.2
22.....	105.2	30.....	104.
23.....	105.2	31.....	105.6
24.....	103.8	32.....	105.6
25.....	105.2	33.....	105.4
26.....	107.	34.....	104.
27.....	107.	Average.....	105.6

At both these last temperature trials, the pigs were driven into a very small feed box and were not run nor frightened. Nine or ten of the pigs showed an eruption similar to that of hog cholera, and all were coughing more or less.

On October 14th, the pigs having been apparently in perfect health for some weeks, they were sent to the farm of Mr. Burch Taylor, near Springfield. Mr. Taylor had lost almost all his pigs from cholera, which was of a very severe type.

Farmers generally, I find, believe that the breed of hogs known as Jersey Reds are the most resistant to the attack of hog cholera, but at Mr. Taylor's several of the Jersey Reds were very sick, and one or more died.

On the night of November 10-11 one of my pigs died, an autopsy was made the afternoon of the 11th. [See autopsy No 27.]

On December 9th three of the pigs were still living, two of which seemed certain to recover. I marked these pigs to determine, so far as might

be with so small a number, the relative value of different doses. The pigs lost their marks, and the experiment was almost a total failure anyway.

As noted above, the cultures used in these two experiments, the one at Kingston the other at Milford Center, were not from the same source. While the two cultures presented the same characteristics in their growth, appearance and action on rabbits, it is quite evident that there were marked differences in their reaction to pigs. So that the figures and percentages of the two experiments can not fairly be combined.

No word has yet been received as to the results of the inoculations in the last nineteen pigs at Mr. Rittenour's.

The figures and percentages of the Kingston experiments are as follows:

Number of inoculations	Nineteen (19.)
" pigs exposed to infection	Fifteen (15.)
" " resisting exposure	Eleven (11.)
Percentage of absolutely perfect results	73½.

In the case of the Milford Center tests the figures are as follows:

Number of pigs inoculated	Fifteen (15.)
" exposed to infection	Fifteen (15.)
" surviving exposure	Three (3.)

There were no "perfect results" in this case, for the three pigs which are yet living have been very sick, and are but little larger and somewhat lighter than when the tests were commenced. Twenty (20) per cent. of this bunch pulled through.

The per cent. of success in the Kingston experiments is sufficiently large to be very encouraging, and it is my wish to make the tests very much more extensively.

When I use the words "absolutely perfect results," I mean this: The pigs so referred to were treated with injections of an attenuated culture; were given time to recover from the mild disease resulting from the inoculations, and were then put among pigs sick, dying and dead of hog cholera, in places where the water supply was a ditch or a pond filled by the wash from the places where these sick pigs were and had been. This test by exposure was a perfectly fair one; it was natural, for well pigs put among sick ones almost invariably contract the disease; it was as severe as could well be imagined—opportunity to devour the remains of dead cholera pigs, no water but that which ran off the surface of an infected lot. No test could be more severe except perhaps the intravenous injection of a large dose of fresh pure culture, and that would be a wholly unnatural manner of infection; and in the first trial 74½ per cent. of the pigs resisted this exposure.

As said before the figures of the second experiment can not fairly be combined with these, for the material used was from a different source. One can compare the number of bushels raised from sowings of two different wheats, but one can not rightly combine the figures.

However encouraging these figures may be and however brilliant the success of the future may be, this question will force itself to the front—is the use of a living culture of a dangerous germ, by inoculation in whatever way, justifiable? Will not the germs which have been modified in the laboratory regain their original virulence in the body of the pig, or in the soil after passing through the animal? May not this method of prevention result in the establishment of the germs on farms where they have not been heretofore?

If the theory of immunity from a second attack by ptomaine saturation of the tissues be the correct one, can we not saturate the tissues with such ptomaine produced and isolated in the laboratory? And further, if the disease *i. e.*, the further multiplication of germs in the body, is arrested by the increase of such ptomaine up to the point of saturation, may we not artificially saturate in the earliest stages of the disease, and thus leave the animal to contend only with the lesions of the organs already produced?

These, gentlemen, are far reaching questions; they reach way over into the domain of human medicine, and they are questions that can not be answered by the results of any small number of experiments. It is my earnest desire that this work be carried forward many steps this coming year, and that can only be done by a large increase in the number of experimental animals at my disposal.

Meantime, eternal vigilance is the price of liberty. No farmer should put boughten pigs among his own, or turn them at large on the farm, until it has been proven by eighteen or twenty days' quarantine that they are perfectly well. This quarantine should be in some place easy to clean and disinfect, or in some place which will not be used again for pigs for several years, and from which infection can not spread.

As high a standard of general health should be maintained as is possible; it is the soundest, healthiest pigs which resist infection longest or escape it altogether. It may seem to be unneighborly to refuse to go and see your friend's sick hogs, or to refuse to let any one go among your well ones, but it is safe, and so you will eliminate one common manner of infection. Never let your pigs remain on a hillside or in a valley below sick ones. And don't take the sick ones out of a bunch—move the well ones, and feed them with sulphurous acid or sulphite of soda.

It is very doubtful economy to try to nurse and dose cholera-sick pigs. Aside from the cost of medicines, feed, care, etc., a dead pig properly

burned or buried is not spreading infection every where he goes. In view of the very small per cent. of cholera hogs which recover, I believe that it would be cheaper to kill the sick pigs as soon as it is surely known that they have hog cholera.

And last of all, see that your neighbors obey the law in regard to the disposal of the bodies of animals dead of infectious diseases.

I wish to express my gratitude to all the gentlemen who have so kindly assisted in my experiments. Thanking the members of the Board for their support, assistance and advice,

I am, gentlemen,

Your obedient servant,

H. M. W. MOORE, A. M., M. D.

SIXTH ANNUAL REPORT
OF THE
—≡OHIO≡—
Dairy and Food Commissioner

TO THE
GOVERNOR OF THE STATE OF OHIO,
FOR THE
TERM ENDING THE FIRST MONDAY IN MAY, 1892.

E. BETHEL, *Commissioner.*

5 A Appendix.

Report of the Commissioner.

TO HON. WILLIAM MCKINLEY, JR., *Governor of Ohio*:

SIR: The law creating the office of "Dairy and Food Commissioner," having been so amended May 1, 1891, as to fill the office by election instead of by appointment, and to provide that the Commissioner so elected shall take his office on the first Tuesday after the first Monday in May following his election, which will place my successor therein on the third day of May, 1892, I herewith have the honor of presenting to your Excellency the report of this Commission for the period from the close of my first report to the present time, being the end of the last term of this office by appointment.

At the conclusion of my service, in looking over the field of the duties assigned by law to the Dairy and Food Commissioner and his two Assistants, and after receiving the statements and views set forth in my preceding report, I feel confirmed and justified, by subsequent experience, in the correctness of all the facts and opinions therein presented; and I would desire to be understood as here reiterating the same.

The two Assistant Commissioners, together with the three expert chemists employed, have faithfully performed the duties required of them, to the full extent of the means placed at their disposal. Their official reports, herewith appended, show how active and persevering they have been in pursuing the objects of the law in their charge. They also manifest the deep interest they have taken in the purpose and intent of the law, by stating many facts of useful information, and making many suggestions of practical importance to all concerned in the successful operation of this Commission. While it may not be feasible to adopt all of the ideas or propositions which their limited experience has induced, their remarks will, I believe, be found worthy of perusal and consideration by members of the Legislature and the people at large.

I have good reason to feel satisfied that the references and intimations embraced in my former report have made a lasting impression on the minds and judgments of the general public and members of the

General Assembly, as well as on those of the special parties, manufacturers and dealers, more directly touched thereby. They have already produced some good and wholesome results, and will further tend, I hope, to bring forth a larger measure of improvement and reform in all the vital interests affected by the enactment and administration of the pure food laws. These things being every-day matters of life and death to the whole community, are not trifles to be made light of or brushed away out of sight, as of no consequence. They are the substances of the very existence of every human being from the cradle to the grave. They make or destroy life and health. They too often, when deleterious, engender disease and bring on death long in advance of natural decay. Truly, important functions are thus committed to this department. When their prime importance becomes duly recognized in this State, as it is in several other states, the necessary means to the proper discharge of these functions will be as adequately provided, in proportion, as are those now so liberally furnished for purely charitable or benevolent objects, from the taxes paid by the people and lavishly disbursed from the Treasury of the State. The appropriations heretofore made for the support of this Commission in a year, would not maintain the charitable institutions of the State for twenty-four hours. It is obvious that this sort of disparagement will not always be continued. Either the requisite means will be provided for competent supervision of our food supplies, or all efforts in this direction will be abandoned. Retrenchment in several other departments and extension in this, might safely be ventured. I can surely say this, upon taking my official leave, without being accused or suspected of any selfish or mercenary motive.

The present Legislature, at its first session, has admitted the absurdly inadequate means heretofore provided for prosecutions by this Commission, by appropriating ten thousand dollars (\$10,000) for the purpose under my successor. This will enable him to commence and carry on prosecutions that were totally out of my power.

By the act of May 1, 1901, which made this office elective, the salary of the Dairy and Food Commissioner was reduced from \$1,500 to \$1,200 a year. The injustice of this reduction became so apparent that the Legislature, at its late session, (H. B. 933, Mr. Sterrett) restored the salary to \$1,500. This is certainly as small an amount as any official can live on at the capital. And it will not, of itself, enable him to remove his family and keep house here, in any sort of style.

By the last act referred to (H. B. 933, Mr. Sterrett), all fines assessed and collected under prosecutions by this Commission are to be paid into the State Treasury, for the use of the Commissioner.

Another highly desirable provision is made by this act, to wit: A suitable office room in the capitol building, to be furnished and set apart for the use of the Commissioner and the property belonging to his office. And the same act provides that the Commissioner shall be entitled to stationery and other supplies, to be furnished by the Secretary of State in like manner as the same are furnished to other State officers. Strange as it may seem, the Dairy and Food Commissioner has not heretofore been furnished with "a suitable office room," nor with stationery and other supplies," as are other State officers; but he has had to purchase all the latter with part of his \$600 allowance for expenses.

One other provision would be a great convenience to this department, and also a public accommodation, namely: Authority for the appointment and salary of a clerk or secretary to the Commissioner in his office. This will certainly be found necessary to the prompt transaction of the business. In the absence of the Commissioner, the office could thus be kept open to the public, and correspondence, with much other clerical work, could be duly attended to.

FOOD PRODUCTS AND EXAMINATIONS.

In the matter of the manufacture of cheese, the Legislature has passed a bill establishing four grades and corresponding brands, to wit: 1, "Ohio Full Cream," made from pure and wholesome milk, without the removal of any original butter fats therefrom, and without the addition of any other animal or vegetable fats, oils or fillings; 2, "Ohio State Cheese," made from pure and wholesome milk, but from which a portion of the butter fats have been removed, and to contain not less than seventy-five per centum of pure fats; 3, "Ohio Standard," the same as "Ohio State," except that it shall contain not less than forty per centum of butter fats; 4, "Ohio Skimmed," the same as No. 3, except that its contents of butter fats may be less than forty per centum. For the detailed requirements, penalties, etc., see the act itself, printed in the Appendix to this report.

I have given much consideration to the complaints and suggestions of wine producers and dealers, but nothing definite or practical has resulted, owing to the failure of the complaining parties to furnish samples of the alleged spurious or adulterated goods. The provisions and penalties of this law are, however, subject to enforcement by the local authorities of every county in the State.

The amended wine law, requiring certain designated products to be invoiced as "pure wine," "wine" and "compounded wine," respectively, will be found printed in the Appendix to this report.

An amended act, correcting an error as to the per centum of solids and of fat required in milk, passed January 30, 1891, is also printed in the Appendix.

I would direct special attention to the reports of the expert chemists, Prof. Fennel and Prof. Rosewater, the former at Cincinnati and the latter at Cleveland, embracing analyses of milk, condensed milk, oleomargarine, vinegar, baking powders, maple syrup, etc. The different views given by these distinguished experts on the question of baking powders lends exceptional interest to their discussion.

There are many ways and means by which our dairymen and farmers generally are imposed upon and humbugged into the adoption of various delusive schemes for alleged making or saving of money, but which too frequently result in dead losses. The ease with which such impositions are practiced is amazing. One of these "fads" or rather "fakes," is the organization and erection of joint-stock creameries, with skim-cheese outfits or other attachments. Farmers should be extremely careful about going into such projects; for the sufficient reason that the profits are seldom likely to accrue to them.

The official returns of taxes paid by manufacturers and dealers in oleomargarine to the United States Treasury Department, under the U. S. internal revenue laws, show an increase of forty (40) per cent. during the revenue year ending June 30, 1891, over that of the preceding revenue year. The State of Ohio got along without bearing her proportional share of this increase, but actually reduced her consumption of the product to a small ratio of the whole. But the fact that this artificial butter is increasing in manufacture, sale and use in this country, in spite of all the obstacles and restrictions placed in its way by the laws of almost every State, would seem to indicate that it is bound to establish itself as an article of diet and traffic. If it should finally so succeed in establishing itself, it should be sold exclusively as imitation and not natural butter, and it should be sold at the reasonable or legitimate price of the artificial product. The annual report of the New York Produce Exchange for 1889 90 and 1891 shows the average cost of *manufacturing* oleomargarine to have been only from $5\frac{1}{2}$ to 8 cents per pound. Yet the Dairy Commissioner of the State of New Jersey, in his report for the year 1891, says: "By our inspectors' reports the average price *paid* for oleomargarine, bought as such, was 20 cents per pound, and very frequently the same article was sold to them as *butter* at 40 cents per pound." This proves the imposition in the traffic to be enormously profitable.

The Dairy Commissioner of New Jersey has compiled statements of oleomargarine factories, and laws relating to the traffic in their

product, which impart much desirable information, and which has taken much labor to obtain and put together in shape. These statements are herewith copied in the Appendix to this report.

What is known at the oleomargarine case, brought at Columbus, Ohio *vs.* Henry Pirung *et al.*, to test the constitutionality of the oleomargarine act, with the view to obtain the adjudication of the supreme court upon it was presented through the common pleas court. Conviction having been had before the magistrate, it was sustained by the common pleas, and the parties were fined \$100.00 and costs. This case was not prosecuted any further on error by the defendant, and was thus finally determined. No complaints have since been made to this Department of any failure to observe the law in that regard at Columbus.

The oleomargarine case at Cleveland against Frank Seithers was carefully and fully prepared and tried. While a conviction was not had, counsel for the State have assured me that the evidence was sufficient for a conviction, and that the acquittal of the defendant was through prejudice and also sympathy of the jury for the defendant.

A large number of prosecutions have been had in various parts of the State for milk adulterations, principally on the complaint of creamery companies. In several instances the parties have pleaded guilty, and in none has there been a failure to convict.

I have experienced much difficulty in prosecuting violations of the law, on account of the reticence of those who may be familiar with the facts, upon which a conviction must in a given case be based, to make the affidavits upon which warrants could be issued. Sufficient and satisfactory proof upon which to make charges against parties in remote parts of the State is very hard to obtain; it being necessary to have samples to send to a chemist for analysis, which during the heated season was almost impossible without rendering the same unfit for use before it reached the chemist.

The cases against J. C. Sullivan and Chas. Michaels, prosecuted before a justice of the peace in Columbus, for violation of the oleomargarine act, in not putting up signs, resulted in convictions and fines of \$50.00 each. All of these fines were afterwards remitted by the Franklin County Commissioners, under the authority in them vested by law, mainly on the ground that the signs had been only temporarily taken down.

The work of this office is necessarily impeded to some extent, but, notwithstanding these difficulties, no complaints have been allowed to go unnoticed. Full and careful investigation has been made where the facts and circumstances were such as to justify it, and prosecutions have

been commenced and vigorously pushed until a conclusion has been reached.

The latest prosecution was that of A. Lowenstein, jr., at Cincinnati, for the illegal sale of oleomargarine, upon complaint and affidavit filed by the Assistant Commissioner for the Southern District, before a justice of the peace, on the 22d of April, 1892. The defendant pleaded guilty, and his fine was assessed at \$100.00, which he paid, together with the costs, \$16.20.

DISBURSEMENTS.

The following is a statement of the expenses of this commission from November 15, 1890, to the end of my term:

E. Bethel, Commissioner, salary.....	\$2,200 00
" " expenses	1,000 00
P. McKeown, Ass't Commissioner, salary	1,466 65
" " " expenses	886 75
H. H. Hyman, salary	1,466 65
" " expenses	888 88
Chemist, Prof. C. T. P. Fennell, fees.....	370 00
" " N. Rosewater, fees.....	430 00
" " H. A. Weber, fees.....	456 50
Attorneys employed to prosecute offenders against the pure food laws, fees	1,513 50
Total	\$10,659 43

Very respectfully,

EDWARD BETHEL,
Dairy and Food Commissioner.

COLUMBUS, OHIO, *May 3, 1892.*

APPENDIX.

STATEMENT OF OLEOMARGARINE FACTORIES IN THE UNITED STATES.

From the year 1877 to the end of 1886, when the National law went into effect, about eighty factories were established. Following is the location and number of factories each year since:

Location.	Year 1886.	Year 1887.	Location.	Year 1889.	Year 1890.	Year 1891.
Colorado.....	2	1	Cambridge.....	1	1	...
Connecticut.....	...	4	Chicago.....	7	5	5
Illinois.....	10	6	Cleveland.....	1	1	1
Indiana.....	1	1	Columbus.....	1	1	1
Kansas.....	1	2	Denver.....	1	1	1
Massachusetts.....	1	1	Hammond.....	1	...	...
Missouri.....	...	2	Kansas City.....	2	3	2
New York.....	6	...	Near Hammond.....	...	1	1
Ohio.....	4	2	New Haven.....	1	...	...
Pennsylvania.....	...	3	Pawtucket.....	1	1	1
Rhode Island.....	5	...	Philadelphia.....	2	3	2
			Providence.....	4	3	1
			South Omaha.....	...	...	1
			St. Louis.....	...	1	...
			Washington, D. C.....	1	...	...
Total.....	30	22	Total.....	23	21	16

STATE AND TERRITORIAL LAWS RELATING TO OLEOMARGARINE.

ALABAMA.—An act approved February 28th, 1887, prohibits the sale of oleomargarine under any but its true name branded upon the package. In addition each purchaser at the time of purchase must be informed of the *nature of the article*.

CALIFORNIA.—By an act approved March 2d, 1881, it is prohibited to manufacture or sell any article having the semblance of natural butter, and which is not the exclusive product of the dairy, except under its true and appropriate name, and unless each roll or package of such substance has the name distinctly painted, branded or stamped thereon.

COLORADO.—An act approved April 6th, 1885, provides that no person shall manufacture, import or bring into the State, or sell oleomargarine, butterine, suine, or any other substance made in imitation of or having the semblance of butter, which substance is not made wholly from pure cream or milk, unless he shall first obtain a license for such purpose from the county, town or city within which such manufacture or sale shall be carried on. The license fee to manufacture is \$1,000 per annum; to sell, \$500 per annum. Every package, wrapper or vessel containing a butter substitute must be branded with the appropriate name in four conspicuous places. Hotels, restaurants, boarding

houses, etc., serving butter substitutes, must keep four notices to that effect conspicuously posted in the *dining-rooms of their establishments*.

CONNECTICUT.—The law of this State prescribes that no imitation butter shall be sold, unless there is a plain sign at the outer main entrance to the establishment, bearing the words "Sold Here," preceded by the name of the imitation article. All oleomargarine must be kept in packages appropriately marked with the name of the contents, and the seller must orally inform each buyer the name of the imitation article. Any article resembling butter and not made wholly from the milk of cows, is defined to be *imitation butter*.

DELAWARE.—An act of February 10th, 1879, as amended March 21st, 1883, prohibits the manufacture or sale of oleomargarine, unless the words "Artificial Butter" be conspicuously upon the tub, box, table, counter, bench or *other vessel or receptacle holding the substance*.

FLORIDA.—An act approved February 17th, 1881, makes it a misdemeanor to knowingly or willfully sell spurious preparations as butter, and imposes penalties upon hotel and boarding house keepers who knowingly or willfully, without giving notice to guests at the table, supply spurious butter for *the use of such guests*.

GEORGIA.—An act approved September 21st, 1883, prohibits the sale of oleomargarine, except under its true name, conspicuously branded upon the package, and also unless the person offering to purchase the article is first informed that it is oleomargarine. In hotels, restaurants, inns or houses of public entertainment serving oleomargarine, placards must be posted in the dining-rooms, and also in the private rooms of the guests, bearing the following words: "This house uses oleomargarine." These words must also appear upon the bill of fare.

IDAHO.—Section 6917 of the Revised Statutes of Idaho, 1887, providing as follows, is all the law relative to oleomargarine: Every person who sells or keeps for sale, or offers for sale, or otherwise disposes of oleomargarine, butterine, mixture imitating butter, or adulterated butter under the name of or under the pretense that the same is butter, or keeps for sale or manufactures oleomargarine, butterine, mixture imitating butter or adulterated butter, without branding the same or the package in which it is contained, on the outside thereof, with the words "Oleomargarine," "Butterine" or "Adulterated Butter," is guilty of a misdemeanor.

ILLINOIS.—An act approved June 1st, 1881, prohibits the manufacture and sale of oleomargarine, except under its true name, stamped on each roll, parcel, or vessel containing the substance, or unless the purchaser is fully informed by the seller of the true name and ingredients of the article. Section 4 of the act requires that the percentage in which oleomargarine, suine, butterine, etc., is mixed with butter be stated upon each package of such compound; the seller must also likewise inform the purchaser.

INDIANA.—An act approved March 3d, 1883, requires that imitation butter shall be branded "Oleomargarine."

IOWA.—An act approved March 27th, 1886, requires all manufacturers of imitation butter to clearly and durably brand each tub, firkin, box or other package, with the true name of contents. The law also provides penalties for selling imitation butter not so marked, and for failure to distinctly notify the purchaser of the nature of the substance, and to deliver to him a written statement referring to and giving the true name of the substance sold. In hotels, restaurants, boarding-houses and other places of public entertainment where imitation butter is served, patrons must be notified of the fact by means of a *printed placard*.

KANSAS.—By an act approved March 2d, 1889, it is prohibited to manufacture or sell oleomargarine, butterine, etc., under a false name; these mixtures must be distinctly labeled as such.

LOUISIANA.—An act approved July 8th, 1886, prohibits the sale, handling or giving away of oleomargarine, butterine, etc., except when so labeled as unmistakably to indicate the true composition thereof.

MAINE.—An act approved March 3d, 1885, relating to the sale of unwholesome foods, prohibits the sale or manufacture of oleomargarine or any other substitute.

MARYLAND.—It is prohibited to manufacture oleomargarine, butterine, etc., or to sell or offer the same for sale.

MASSACHUSETTS.—Section 1 of an act approved March 10th, 1891, to take effect the first day of September, 1891, reads as follows:

"No person, by himself, or his agents, or servants, shall render or manufacture, sell or offer for sale, expose for sale, or have in his possession with intent to sell, any article product or compound made wholly or partly out of any fat, oil or oleaginous substance or compound thereof, not produced from unadulterated milk or cream from the same *provided*, that nothing in this act shall be construed to prohibit the manufacture or sale of oleomargarine in a separate and distinct form, and in such manner as will advise the consumer of its real character, free from coloration or ingredient that causes it to look like butter."

Another act imposes penalties upon whoever sells or offers for sale to any person who asks, sends or inquires for butter, any oleomargarine, butterine, or any substance made in imitation of pure butter. Where oleomargarine or butterine is served in hotels, restaurants or any lunch-counter, guests or patrons thereof must be notified of the fact.

MICHIGAN.—An act approved June 9th, 1887, prohibits the sale as butter or for butter any oleomargarine, butterine or other article or substance resembling butter not made exclusively from milk or cream. The act also requires conspicuous notices to be posted up in hotels, restaurants and other similar places using imitation butter, and furnishing food to persons paying for the same. An act approved April 29th, 1891, prohibits the use of oleomargarine, butterine or any other substitute for butter in any of the public institutions of the State.

MINNESOTA.—An act approved March 2d, 1887, prohibits the sale or manufacture of oleomargarine or adulterated butter. It is also prohibited to *have in possession* oleomargarine, or other similar butter substitutes that have been colored to resemble natural butter. An act of April 21st, 1891, to take effect from the date of its passage, provides against the sale or having in possession, with intent to sell, any butter substitute that is of any other color than bright pink.

MISSISSIPPI.—An act approved March 9th, 1882, provides that every person dealing in oleomargarine, or other similarly-manufactured butter, must distinctly mark or brand the same "Oleomargarine," or with whatever name it may be known by, and requires every dealer in the article to pay a privilege tax of \$50.

MISSOURI.—The law requires that the name of any substance made in imitation of butter shall be clearly and indelibly branded, marked or labeled upon the packages. Hotels, boarding-houses, etc., serving oleomargarine must clearly and legibly mark the vessel in which such compound is served with the words "Oleomargarine" or "Impure Butter."

MONTANA.—Any article or compound not the exclusive product of the dairy is oleomargarine. Each package containing such substance must be marked "Oleomargarine Butter." Hotels, restaurants, boarding-houses, etc., using oleomargarine, butterine, or any other butter substitutes, shall post up three notices in the English language and one in the German language conspicuously in the rooms where meals are served, bearing the true and common name of the substitute over the words, "Used here instead of butter."

NEBRASKA.—An act which took effect February 24th, 1883, provides that any article in semblance of natural butter that is not made exclusively from milk or cream, shall be distinctly and durably branded, stamped, or marked "Oleomargarine" or "Butterine." Retailers must deliver with each parcel a label bearing the words "Oleomargarine" or "Butterine."

NEVADA.—All packages containing any article in semblance of natural butter, manufactured or offered for sale, and which is not made exclusively from milk or cream, must bear the word "Oleomargarine" distinctly branded or marked thereon.

NEW HAMPSHIRE.—A law of August 26th, 1885, provides against the sale of butter substitutes unless they are colored pink. This requirement renders the law practically prohibitory.

NEW JERSEY.—An act of March 22d, 1886, provides against the sale of oleomargarine or any substance in semblance of natural butter, except when the tubs, pails, boxes, firkins, vessels or other packages containing the same are marked or labeled with the words "Oleomargarine," "Imitation Butter," &c., and have painted thereon a black stripe, at least three inches wide, midway between the top and bottom and completely encircling the package. An act supplemental to the above, approved April 21st, 1887, prohibits the sale or having in possession for purposes of sale of oleomargarine, butterine, etc., containing any coloring matter whatever, and requires retail dealers selling less than the original package to furnish the purchaser with a printed card or notice of the nature of the substance.

NEW MEXICO.—Section 4 of a food act of February 28th, 1889, makes it a misdemeanor to sell any article of food which is not of the substance, nature and quality of the article demanded by the purchaser.

NEW YORK.—The law of this State, as amended June 4th, 1886, is prohibitive.

NORTH DAKOTA.—Under the law of this State any one selling or offering for sale adulterated butter or oleomargarine, without labeling, branding or marking the substance "Adulterated Butter" or "Oleomargarine," or in case of retail sales without delivering to the purchaser a label or wrapper bearing these words in printed letters, shall forfeit \$100 for the first offense, and for every subsequent violation \$200.

OHIO.—An act passed March 7th, 1890, to take effect May 1st following, prohibits the manufacture or sale of oleomargarine if the substance is made in the semblance of butter. Section 2 of the act reads: "It is further provided that nothing in this act shall be construed to prohibit the manufacture or sale of oleomargarine in separate and distinct form, and in such manner as will advise the consumer of its real character, free from any coloring matter or other ingredients causing it to look like or appear to be butter."

OREGON.—Under an act approved February 25th, 1889, oleomargarine and other butter substitutes can not be sold, unless they are so marked as to plainly establish their true character and distinguish them from genuine dairy products. In public dining and eating rooms, where such substances are served, guests shall be informed of the fact by notice printed upon the bill of fare, or conspicuously posted in the room.

PENNSYLVANIA.—An act of May 21st, 1885, provides against the manufacture or sale of oleomargarine. It has been vigorously resisted by manufacturers and dealers. On May 3d, 1887, it was declared constitutional by the Supreme Court. Nevertheless, there are several manufacturers in Philadelphia, and a large number of dealers in Pittsburgh.

RHODE ISLAND.—Chapter 126, Public Statutes of Rhode Island, 1882, requires that every tub, firkin, box, etc., containing any substance in semblance of butter, and which is not made exclusively from milk or cream, shall bear the word "Oleomargarine." Retailers of the substance must deliver to the purchaser a written or printed card bearing the word "Oleomargarine."

SOUTH CAROLINA.—An act approved December 22d, 1885, makes it a misdemeanor to fraudulently adulterate, for the purpose of sale, of any article of food.

TEXAS.—Article 393, Chapter 2, Penal Code, provides punishment for the fraudulent adulteration, for the purpose of sale, any article intended for food.

VERMONT.—By an act approved and in effect November 13th, 1890, it is prohibited to sell, expose for sale, or have in possession with intent to sell, any article or compound

"made in imitation of butter, and not wholly made from milk or cream, and that is of any other color than pink."

VIRGINIA.—Under the laws of this state all imitation butter manufactured for sale, or offered for sale, must be distinctly and durably stamped, branded or marked with the word "Oleomargarine" in plain Roman letters, not less than half an inch square. In cases of retail sales the seller must deliver therewith to the purchaser a written or printed label bearing the word "Oleomargarine."

WASHINGTON.—Section 2 of an act approved January 20th, 1890, reads as follows: "No person or persons shall sell, supply or offer for sale or exchange any oleaginous substance, or any compound of the same, other than that produced from wholesome and unadulterated milk or cream of the same, unless the said oleaginous substance and the package containing the same shall be marked so as to plainly establish its true character and distinguish it from pure and genuine dairy products; and in any public dining or eating room where imitation dairy product or products are commonly and knowingly used as an article of food, the bill of fare used in such dining or eating room shall state the fact in the same sized type as is used in printing the body of said bill of fare; or if no bill of fare is used, then in a conspicuous place of said dining or eating room, easily seen by any one entering said room, shall be posted a notice stating the name or names of such imitation dairy products; *provided*, that the addition of harmless coloring matter to any product manufactured from pure, unadulterated milk, or the cream thereof, shall not come within the provisions of this act."

WEST VIRGINIA.—Section 1 of an act passed February 11th, and approved February 16th, 1891, reads as follows: "That from and after the passage of this act it shall be unlawful for any manufacturer or vendor of oleomargarine, artificial or adulterated butter, to manufacture or offer for sale within the limits of this State, any oleomargarine, artificial or adulterated butter, whether the same be manufactured within or without the State, unless the same be colored pink."

WISCONSIN.—An act approved April 6th, 1891, to take effect April 11th, 1891, date of publication, prohibits the sale of any article having the semblance of butter, which substance is not made wholly from pure milk or cream, salt and harmless coloring matter, except under its true name, to be durably painted, stamped, sealed, or marked in bold-faced capital letters, not less than five-line pica in size, upon the package. With any quantity sold less than the original package, there must be delivered with each such quantity a label bearing the true name of the substance. Section 7 provides that no butter not made wholly and directly from pure milk or cream, salt and harmless coloring matter, shall be used in any of the charitable or penal institutions of the State.

REPORT OF PROF. H. A. WEBER, CHEMIST.

HON. EDWARD BETHEL, *Ohio State Dairy and Food Commissioner*:

SIR: The undersigned has the honor of submitting the following report of work done, as Chemist of the Ohio State Dairy and Food Commission, from November 15, 1890, to November 15, 1891.

The analyses made number fifty, and embrace foods and articles which enter into food. Four of the analyses were paid by parties sending the articles. The rest were paid by the State.

The following tabular statement includes Serial Nos. 613 to 662, and shows the kind and number of articles examined, as well as their condition:

Articles.	No. analyse.	No. adulterated.	No. pure.
Milk.....	11	8	3
Vinegar.....	7	5	2
Butter.....	6	.....	6
Coffee.....	2	2	.....
Pepper.....	1	1	.....
Honey.....	1	.....	1
Dried beef.....	1	.....	1
Ginger.....	2	1	1
Tea.....	1	.....	1
Beer.....	1	.....	1
Candy.....	2	.....	2
Sugar.....	1	.....	1
Lard.....	1	1	.....
Flour.....	1	1	.....
Emulsions.....	3	.....	.....
Baking powder.....	1	.....	.....
Anti-ferment.....	1	.....	.....
Lard bleacher.....	1	.....	.....
Preservative salt.....	4	.....	.....
Water.....	2	.....	.....
Total	50	.....	.....

OHIO STATE UNIVERSITY, January, 1892.

H. A. WEBER.

CINCINNATI, OHIO.

HON. EDWARD BETHEL, *Dairy and Food Commissioner, Columbus, Ohio:*

DEAR SIR: I have the honor to submit herewith my second report.

Since the general public is persuaded of the belief that the principal duties of this Commission are to correct the abuses and impositions which the manufacture of oleomargarine has caused, it is against this class of offenders that my chief effort has been directed; and while it is not sought to create the impression that this Commission has made the advances which its most ardent supporters could desire in the suppression of the traffic in oleomargarine, none, save the most captious, will deny that progress of a substantial and lasting character has taken place.

A more or formidable class of foes than are those arranged to make war upon and secure the defeat of measures inimical to the imitation butter interests, it would be difficult to conceive of.

Rich, powerful and aggressive, they have opposed encroachments, real or fancied, upon their rights, with a tenacity and perseverance which, while challenging admiration, can not fail to excite pity that they should not be enlisted in a worthier cause. All the ground which has been gained by this Commission has been accomplished only after every inch has been stubbornly contested. The ingenuity and subtlety of the brightest lights in the legal profession have been exerted in efforts to bring about our discomfiture.

In my efforts to put a stop to the complaints which I have not unfrequently received in reference to violations of this law, I caused the arrest of the following persons: John F. Seiter, Henry Rybolt, Scott Sims, Elmer Pealky, Henry Slommers and Chas. Niemeyer & Co.

In the cases of Chas. Niemeyer & Co. and Elmer Pealky, owing to that indefinable something which is well known to at times warp the mind and sway the judgment of the presumably best of juries, a verdict against this Commission was returned—the defendants being acquitted. I had fully expected a conviction in these two cases, as our attorneys fancied they had made out a clear and glaring violation of the law; but since the finding of juries surpass all understandings, our calculations miscarried.

It is a source of pleasure and gratification to record that in the cases of Seiter, Rybold, Sims and Slommers, verdicts in accordance with the facts in the cases were given; each of the defendants being assessed a penalty of one hundred (\$100.00) dollars and the costs of the prosecution.

As set forth in my last report, the cases of Ryan & Son, Chas. Newcomb, Benj. Otting and John J. Hope were taken up on error to the court of common pleas, and the judgments were affirmed by that court.

Their next appeal was to the circuit court, and what success attended us there, is best shown by a perusal of the decision prepared by Judge Cox, the essential part of which is as follows:

"The affidavits in all the cases are alike, and it is claimed are all defective, and do not charge an offense. They charge that the defendants sold (and in some of them kept for sale) an article and compound, made, etc., by compounding with and adding to cream or butter animal fats or animal or vegetable oils not produced from unadulterated milk or cream from the same, so as to produce an article and compound and human food in imitation of butter.

"It will be perceived that the allegations as to the substance sold and held for sale are all in the disjunctive. What the component parts of the compound are does not positively appear. Whether it is milk added to animal fats, or butter added to vegetable oils, or cream added to animal or vegetable oils, can not be ascertained from the description. *Each one of these would be a distinct offense under the statutes*, but the particular one relied on should be stated positively and not disjunctively. We think this objection to the affidavits is well taken, that they do not charge an offense under the statute, and that all the proceedings before the magistrate were erroneous. The court of common pleas should have reversed the judgment. The judgment of the court of common pleas, affirming the judgment of the magistrate in each case will therefore be reversed, with costs, and the cases remanded to the magistrate with instructions to discharge the defendants with costs."

I put it mildly when I say that the decision was a sore disappointment to this Commission, and that the work and labor of months was brought to a standstill through a mere technicality in law.

In taking advantages of these technicalities, the defendants' attorneys broke faith with our attorneys; as they had agreed that these should be test cases and decided on their merits. Though the decision of Judge Cox was an adverse one, it clearly demonstrated the fact that convictions under the statute can occur where the wording of the affidavit is properly drawn; and it is this portion of the decision which most encourages us and dismays our opponents.

Having profited, it is hoped from the salutary lesson taught me in the reversed cases, I have caused the affidavits in all subsequent cases to be each worded differently; fully realizing that this was the surest and wisest course to follow, since it will necessitate separate trials for each defendant, and is bound to bring out every point whereby the opposition hope to overcome us.

Though I fear that during my incumbency of this office the issue of the cases now pending will not be known, I nevertheless feel confident that the day is not far distant when most of the complaints now made in regard to the adulteration and deception in the sale of bogus butter will be unheard of; the anxiety for the future of the dairy interests removed; and the laudable aims and purposes of this beneficent law will have been achieved.

The names and place of business of persons handling oleomargarine in this city follows:

WHOLESALE OLEOMARGARINE DEALERS.

Smith & Blair.....	Cincinnati.
Eureka Dairy Co.....	"
Cincinnati Beef Co.....	"

RETAIL OLEOMARGARINE DEALERS.

H. Licking	84 East Pearl street.
"	180 Linn street.
"	193 Elder "
F. A. Campbell	638 Elm "
Mrs. B. Hart.....	439 Linn "
J. G. Neihoff.....	373 West Fifth street.
Miss M. Fitzpatrick	205 Linn street.
Thomas Foster.....	98 Broadway street.
H. J. Berens.....	11 Plum street.
E. Evans.....	195 Broadway street.
E. Victor.....	589 Freeman "
W. A. Ryon & Son.....	49 Broadway "
John Hart.....	484 John street.
Fred Wulfers	195 George "
F. H. Astroth.....	39 Elder "
Henry Biggs.....	154 State avenue.
Rolfing & Vaske.....	57 West Court street.
Hamilton Grocery Co.....	230 West 5 th "
"	97 West Court "
"	40 East Pearl "
Geo. F. Nugent.....	238 Central avenue.
Andrew Rohan	Public Markets.
D. J. Cronin.....	" "
J. Hanschemeyer.....	" "
Patrick McGreevy.....	" "
Michael Nolan.....	" "
H. Reinhold.....	" "
Michael Hope	" "
Mrs. O. Gordon	" "
Mrs. B. Sweeney.....	" "
R. D. Grear.....	" "
W. H. Grear.....	" "
Mrs. D. Hannon.....	" "
Thomas Meara.....	" "
Mary Mack.....	" "
L. G. Reinhold.....	" "
W. Hope	" "
J. J. Murphy.....	170 Broadway street.
F. H. Bemis	Court and Race streets.
George Berger	70 Elder street.
H. Licking	106 Abigail street.
"	183 Broadway street.
L. H. Brandewie	Foraker Park avenue.
Reis & Otting.....	44 Elder street.
W. Neimeyer & Co.....	John and Wade streets.

P. Tracy	118 Central avenue.
F. A. Rohl & Co	Dayton (Ohio).
J. Mahoney	84 Broadway street.
Geo. Johanningman	6 Harrison avenue.
"	209 Linn street.
Scott Sims	204 Plum "
M. V. Peden	344 Freeman avenue.
F. Vogt	361 Broadway street.
Wm. Multner	5 Hamilton avenue.
J. F. Leiter	Public Markets.
"	" "
George Failor	Norwood.
J. T. Sommers	78 East Pearl street.
Western Dairy Co.	69 West Court street.
J. Lucken	Public Markets.
Robt. Woodburn	Molitor and Bellevue.
A. Riedy	672 Eastern avenue.
T. Denneman	Concord and Morgan.
H. H. Johanningman & Co	142 West Sixth street.
"	Eighth and Baymiller.
"	628 Race street.
Queen City Tea Co.	286 West Sixth street.
Schneider & Bro	Eighth and State avenues.
D. Kohstall	Elmwood Place.
H. Licking	25 Budd street.
Geo. Johanningman	6 Thirteenth street.
C. H. Schlotman	Madison pike.
A. Technow	481 Main street.
E. Tschira	354 Coleraine avenue.
C. W. Klarman	Warsaw pike.
A. J. Miller & Co.	45 West Court street.
McIntyre & Rittenhouse	140 West Sixth street.
J. & L. Blum	353 McMicken avenue.
Wittenburg & Holsinger	54 Elder street.
Thos. Ryan	308 East Sixth street.
Geo. Johanningman	Public Markets.
F. W. Zipper	250 West Sixth street.
Thomas Meara	171½ Broadway "
J. Lucken	1022 Central avenue.
Schneider Bros.	149 West Court street.
Linfert & Schroth	50 Elder street.
G. Lowenstein, jr., & Co	Sixth and Mound streets.
J. Johanningman	378 West Court street.
"	565 Freeman avenue.
D. C. Orr	431 Central avenue.
B. Berthe	Sixth and Carr streets.
F. Diehl, jr.	158 West Sixth street.
J. Brockhoff	Warsaw pike.
A. B. Eyon	Addyston.
John Seiter	Public Markets.
John Miller	33 Fourteenth street.
Ambrose Kye	62 Lock street.
August Loewe	1078 Vine street.
George M. Thompson	161 Broadway.
Joseph Siefke	236 East Pearl street.

VINEGAR.

The praiseworthy disposition among vinegar dealers to live up to the requirements of the law, I find to be quite general.

I have had analyzed four samples of vinegar, and in two instances the goods were found to be as represented. Sample No. 2, termed Malted Vinegarine, made only by the Red Cross Vinegar Co., St. Louis, Mo., and alleged to be a superior article for table use, was found to be a first class imposition; being neither fruit nor cider vinegar. Having been prevented from taking any legal action against the firm, they being non-residents, I had published in the daily papers here a statement warning all dealers, under the penalties of the law, to desist from its sale, and cautioning the public against being imposed upon in purchasing such an article. This evidently had the desired effect, as diligent investigation failed to show that any of it is now exposed for sale in this market.

Sample No. 4, a vinegar of like description, being neither fruit nor cider, was sent me to have analyzed by Messrs. Kuns and Buehl, of Middletown, Ohio. Repeated requests to be furnished with the name of the manufacturer were wholly ignored, and in consequence I was unable to prosecute the offender.

MAPLE SYRUP.

Deceptions surpassing those indulged in by maple syrup dealers, must surely be very exceptional. Professor Fennel's report of cases submitted, shows that herein the art of the falsifier has reached such a degree of perfection that he is able to palm off a mixture of glucose and molasses as "Pure Maple Syrup," receiving, moreover, for this compound as good a price as the genuine product commands.

Samples Nos. 1 and 2, purchased by Mr. Oscar Martin for pure maple syrup, from the firm of S. W. & P. W. Leonard, of Wilmington, Ohio, were found in one case to be a compound of molasses, cane sugar and glucose, without any trace whatsoever of maple; and the report on sample No. 2 of the same firm's make, shows but slight improvement. Sample No. 3, labeled Barker & Co., Vermont, first quality, was found to be a mixture of glucose and molasses. Sample No. 4, labeled American Preserve Co., Cincinnati, O., warranted pure, was a mixture of maple, glucose and molasses. Sample No. 5, labeled Tuttle & Harmon, Burton, Ohio, showed some improvement, being reported "Mixture of maple deprived of its sugar. Skimmed maple syrup." In the first two cases I lost no small amount of time, awaiting assistance, which never came, from the prosecuting attorney at Wilmington, Ohio, Mr. Savage. I finally learned of his positive refusal to prosecute the cases. Having no other recourse, I was forced to reluctantly abandon them. It is my intention to push the cases of the other three violations to a speedy conclusion, though I anticipate considerable opposition.

MILK.

To the unremitting vigilance and activity of the Department of Health in this city, whose interests are so well looked after by its faithful and efficient head, Dr. Prendergast, is chiefly due the marked changes for the better in the character of the milk supplies in this market.

There has been no let-up to the admirably conducted warfare, made mention of in my last report, upon unscrupulous and careless dairymen. As a consequence, incalculable good has been wrought, not alone to the general public, but also to the honest dealer in this most vital commodity. I have no hesitancy in saying that the quality of the milk now furnished this community fully meets all requirements, and that the demands of the "pure milk" advocates have been reasonably realized, both in regard to the cleanliness and healthfulness of the quarters where the cows are kept, and in the purity of the milk prepared for consumption.

CONDENSED MILK.

Having reason to believe that an analysis of the condensed milk, so largely sold hereabouts, would lead to good results, I procured four different samples, which were submitted for examination. It will be observed that Professor Fennel has deemed it proper to report the samples as pure, so far as present requirements are concerned.

Professor Fennel's report is an exhaustive and thorough one, and will well repay the closest scrutiny. So searching and painstaking is it, and so valuable are the suggestions it contains, that any thing which I might add would be merely superfluous. I trust that his timely suggestions respecting this very useful and typical food (milk) may receive that heed and consideration which they deservedly merit.

PURE FOOD LAW.

Some idea of the extent to which the inventive geniuses of the land have employed their talents in the inviting field of food adulteration, may be obtained, when it is considered that precious few of the articles prepared for daily consumption are exempt from the baneful effects of adulterants, and that the great majority of the necessities of life contain more or less hurtful ingredients.

Teas, coffees and spices, comforts alike to the rich man and to the poor man, especially, afford opportunities for the exercise of fraudulent arts; for it would seem that in these foods are the most alarming deceptions practiced. With such a state of affairs prevailing, renewed force and sanction are lent to the suggestions contained in my former report.

A more reasonable allowance for the carrying on of analyses, and an appropriation in some degree commensurate to needful expenses are requisite, if the good objects of the pure food law are to be attained, and the vicious and menacing evils of adulteration eradicated.

In closing this, my last report, I deem it meet and proper to state that Mr. John E. Bruce, of the law firm of Bruce & Cleveland, has discharged the responsible duties devolving upon him with unvarying care and fidelity, and has contributed signally to whatever of success has attended my efforts. By his hard labor, faithful service and genuine interest in behalf of this commission, he has earned its lasting thanks, which are hereby tendered.

Professor Fennel's report follows. His well-known ability and thorough interest in his work and labor needs no indorsement from my hands.

Respectfully submitted.

P. McKEOWN.

CINCINNATI, OHIO, April, 1892.

HON. P. McKEOWN, *Assistant Dairy and Food Commissioner, Cincinnati, Ohio:*—

DEAR SIR: The undersigned, as chemist for the Southern District of Ohio, has the honor to submit the following report:

Chemical examinations show conclusively that the adulterations of our food products is general and steadily increasing. That such a state of affairs should exist is sad indeed, and yet not surprising, owing to the fact that the general public in its struggle for existence demands cheap goods; thereby compelling and justifying the producer of food products to exercise his ingenuity to the utmost to supply this demand. This is done by sacrificing quality for quantity, and as a result the market is flooded by cheap but adulterated products. Chemical examination has shown that these adulterants and adulterated products are fortunately not directly injurious to health, with perhaps one exception; and yet it should be apparent

to a fair minded public that such adulterated food products are not as nutritious or as wholesome as the pure articles.

The protection offered by legislation is not appreciated. In fact, its object is misjudged and abused, by twisting and perverting the language of the laws; and for the most part, the protection that might accrue from honest legislation for the general welfare of the public, by stimulating legitimate competition in pure and wholesome food products is lost.

All the channels open to a civilized community should be utilized by this department to inform the public to what extent adulteration is practiced, and by what method the consumer is robbed.

Public sentiment should be aroused against all species of fraud in food and drugs. Regarding the latter, no effort has been made to check the abuses practiced upon a too confiding public.

The pharmacists of the State, through the Ohio State Pharmacists' Association, should offer every encouragement, both financial and moral, to suppress the existing evil—"cheap but adulterated drugs."

The subject of adulteration is of vital importance to every community, whether rich or poor, for the health, prosperity and morality of the whole nation are at stake

CONDENSED MILK.

In the preparation of condensed milk, it may be observed that the milk as taken from the cow loses water by condensation, and gains sugar, by addition. The process of condensation taking place at low temperature, that is, in vacuo, the condensed milk virtually contains all the elements of fresh milk, which practically have undergone no modification.

Milk forms the most important factor in the economy of life. It represents a complete or typical food, in which all the constituents necessary for maintaining the life and growth of the body are present.

Occupying so important a position in the life of man, it must not be inferred to be a medicine; for milk is not, strictly speaking, a medicine but rather an article of diet. It, however, plays an important part in medicine, in fact, in many diseases, the physician places his principal reliance upon pure milk for a speedy and permanent cure. Condensed milk is supposed to possess all the properties of pure milk in a convenient form and suitable at all times.

Under such conditions an analysis of milk and condensed milk has two objects in view: firstly, considered from a commercial standpoint; and secondly, from a sanitary one.

CONSTITUENTS OF MILK.

The constituents of milk, which are to be determined by analysis, are water, fat, nitrogenous matter, sugar and salts.

Many analyses have been made by as many reputable chemists, and yet a great variety of divergent results have been presented. Why such divergent results should exist, becomes a very pertinent question.

To the uninitiated this is an unaccountable fact, to be explained only by a very excusable and proper conclusion, that analytical chemistry is not a reliable or exact science, and that it can not produce in practice what it expresses by equation and theory.

To the initiated, the lack of uniformity in results is plain. To obtain uniform results, chemists must agree upon methods of procedure, and thereby avoid divergence of results. All other conditions being equal, any further discrepancies would be attributable only to incompetency or bad faith. Uniformity in manipulation is

the prime factor in the attainment of uniform results, and this should be the *sine qua non* of the chemist.

The composition of "pure milk" having been established in accordance with results obtained by uniform methods of analysis, we are in a position to consider any sophistication of milk and judge its value from a commercial standpoint. The adulterations practiced consist usually in the removal of cream or the addition of water; yet these, in themselves have no bearing on the sanitary relations of milk as a model food. Chemical analysis can only establish a commercial value of milk; for its true value, its sanitary value, does not depend exclusively upon the proper proportions of the component parts. Without entering into a discussion as to the value of a chemical analysis for commercial and sanitary standardization, we can only recommend the establishment of fixed constituents controlling the commercial value of milk and its concentrated product, condensed milk. The law regulating the sale of milk fixes the constituents of milk as follows: Water 87.5%; total solids, 12.5%; the total solids to contain 8.125% fat; excepting the months of May and June, when milk containing less than 12% of milk solids shall be deemed to be not of good standard quality.

The law regulating the sale of condensed milk is very vague and misleading, and offers every opportunity for misconstruction by legal interpretation. The law regulating the sale of condensed milk is embodied in amended House bill No. 185, Sec. 18, which reads as follows: "No person shall manufacture, sell, exchange, expose or offer for sale or exchange, any condensed milk, unless the package, can or vessel containing the same shall be distinctly labeled, stamped or marked with its true name, brand, by whom and under what name made, and no condensed milk shall be made, exchanged, exposed or offered for sale or exchange unless the same be made from pure, clean, healthy, fresh, unadulterated and wholesome milk, from which the cream has not been removed, or unless the proportions of milk solids contained in the condensed milk shall be in amount the equivalent of 12% of milk solids in crude milk, and of such solids 25% shall be fat."

It has been previously observed that condensed milk is nothing more than milk deprived of part of its water and sweetened by the addition of a considerable quantity of sugar. The quantity of sugar added is supposed to be in the ratio of 12½ lbs. to 100 lbs. of milk. In the process of condensation, that is, by the evaporation of the constituent water in the milk, there can be no loss of fat or nitrogenous matter (the so-called caseine), and by the addition of sugar there can be no addition of fat or caseine; and therefore the ratio of fat and caseine must remain the same in the condensed milk as originally found in the crude milk. On this basis alone can the value of condensed milk be determined. The law as at present in force stipulates an equivalent of 12% including the factors, caseine, fat, salts and sugar; the latter being a variable quantity, owing to its artificial addition to the crude milk. The law does not fix the amount of concentration, nor the quantity of sugar admissible as an artificial addition.

These conditions, having a bearing on the subject, will be shown by the data furnished hereafter.

ANALYSES OF MILK.

Analyses of milk furnished by the highest authority, the U. S. Department of Agriculture, resulted as follows:

The highest, lowest and mean averages of 169 analyses of milk tabulated as follows:

	Lowest average.	Highest average.	Mean average.
Water.....	84.58%	89.2%	86.89%
Fat.....	2.73	6.05	4.39
Caseine.....	2.24	4.05	3.14
Sugar.....	4.83	5.67	5.00
Salts.....	0.54	1.21	0.87

In a series of eight analyses from one sample of milk obtained in the latter part of April, 1891, the following analytical data were obtained: In each instance 100.0 grammes of the milk were used, the evaporation being conducted on water bath until the weight was reduced to 75, 66, 50, 40, 34, 25, 20, 17 grammes respectively.

ANALYSIS OF THE ORIGINAL MILK.

Water.....	86.9%
Fat.....	4.27
Caseine.....	3.12
Sugar.....	5.00
Salts.....	0.70

ANALYSIS OF THE ORIGINAL MILK REDUCED TO—

	75.0 grammes.	66.0 grammes.	50.0 grammes.	40. grammes.
Water.....	82.52%	80.81%	73.75%	67.20%
Fat.....	5.65	6.40	8.50	10.65
Caseine.....	4.12	4.69	6.30	7.80
Sugar.....	6.65	7.45	10.00	12.48
Salts.....	0.93	1.00	1.38	1.73
	99.87%	99.85%	99.93%	99.86%

	34. grammes.	25. grammes.	20. grammes.	17. grammes.
Water.....	60.9%	47.5%	34.5%	21.4%
Fat.....	12.8	17.0	21.3	25.6
Caseine.....	9.4	12.55	15.68	18.9
Sugar.....	15.0	20.01	24.97	29.9
Salts.....	2.3	2.83	3.54	4.2
	100.4%	99.89%	99.99%	100.0%

Condensed milk obtained from the above milk by the addition of sugar in the ratio of 1. to 8. would show the following percentage of constituents.

	75.0 grammes.	68. grammes.	50.0 grammes.	40. grammes.
Water	78.3%	71.4%	65.5%	59.7%
Fat	5.0	5.7	7.6	9.5
Caseine	3.7	4.2	5.6	7.0
Sugar	17.0	17.8	20.0	22.0
Salts	0.8	0.9	1.2	1.5
	99.8%	100.0%	99.9%	99.7%

	84. grammes.	25. grammes.	20. grammes.	17. grammes.
Water	54.0%	42.3%	30.6%	19.0%
Fat	11.1	15.1	19.0	22.7
Caseine	8.4	11.3	14.0	16.8
Sugar	24.5	28.9	33.3	37.7
Salts	1.8	2.5	3.1	3.7
	99.8%	100.0%	100.0%	99.9%

ANALYSES OF CONDENSED MILK.

The samples of condensed milk presented for examination were marked Nos. 1, 2, 3 and 4, respectively, and found to consist as follows:

	No. 1.	No. 2.	No. 3.	No. 4.
Water	56.7%	42.0%	42.5%	34.2%
Fat	12.5	9.5	8.5	6.5
Caseine	6.4	9.0	9.5	12.3
Sugar	21.5	35.9	37.0	42.0
Salts	2.4	2.4	2.8	3.9
	99.5%	98.8%	100.3%	98.8%

Serial No. 17. Serial No. 18. Serial No. 19. Serial No. 20.

CONCLUSIONS.

Sample No. 1—	
Total solids	52.8%
Fat	12.5
Sample No. 2—	
Total solids	56.6%
Fat	9.5
Sample No. 3—	
Total solids	57.8%
Fat	8.5

Sample No. 4—

Total solids.....	64.6%
Fat.....	6.5

According to the reading of the law, all samples would be considered below the standard; and yet Sample No. 1, compared with the above acquired standards, will be found to be of standard quality.

REMARKS.

Chemical examination of the constituent "sugar," plainly indicated the "glucose" condition; Sample No. 4 being absolutely free from cane sugar. From the data established by the actual preparation of condensed milk as per above results, we may conclude that sample No. 1 was prepared from milk evaporated to about 80 parts, and to which less than 12.5% sugar was added; and further, that the quality of fat was increased by artificial addition. The sample presented a rich, creamy consistence, and a golden yellow color, in all probability produced by butter fat previously artificially colored.

Sample No. 2. This sample was prepared from milk evaporated to about 22 parts, the milk having been previously deprived of about one-half of its fat, and the loss in volume made up by the addition of about 25% water. The addition of sugar was more than 12.5%, partly cane sugar.

Sample No. 3. This sample presented almost the identical conditions shown in Sample No. 2, it being a little more skimmed and diluted.

Sample No. 4. This sample was prepared from milk evaporated to about 20 parts; the milk having been deprived of about two-thirds of its fat, and the loss in volume made up by the addition of about 20% water. The addition of sugar was excessive, and consisted wholly of glucose.

The law being considered defective in not fixing the proper standard, making it a matter of impossibility to determine the equivalent of total solids legally, and further considering the percentage of fat alone, no criterion for quality, it was deemed proper to report the samples as pure, so far as present requirements were concerned.

OLEOMARGARINE.

The law regulating the sale of this compound, specifies the sale in a separate and distinct form, and in such a manner as will advise the consumer of its real character, free from any coloring matter or other ingredient causing it to look like or to appear to be butter. In view of this specification, the presence of coloring matter should be sufficient to legally condemn the product; yet, in every instance, a complete analysis for the identification of the compound was required.

The results are tabulated as follows:

	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.
Water.....	8.6%	8.4%	6.4%	10.0%	10.5%
Solids.....	91.4	91.6	93.6	90.0	89.5
Caseine.....	0.8	0.7	0.8	0.8	0.7
Salt.....	4.0	2.2	3.8	2.1	2.8
Fats.....	86.6	88.7	87.1	87.1	86.0
Butterine.....	0.0	0.0	0.0	0.0	0.0
Stearine.....	19.1	22.0	21.0	25.0	22.0
Oleine.....	80.8	78.0	79.5	75.0	78.0
Coloring.....	Yes.	Yes.	Yes.	Yes.	Yes.
Date.....	Jan. 10, '91.	Feb. 12, '91.	Feb. '91.	Feb. 17, '91.	Feb. 21, '91.
Serial.....	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.

	No. 16.	No. 17.	No. 18.	No. 19.	No. 20.
Water	10.0%	10.0%	7.3%	10.2%	10.9%
Solids	90.0	90.0	92.7	89.8	89.1
Caseine	0.58	0.82	0.8	0.8	1.0
Salt	2.22	1.98	2.9	2.9	3.3
Fats.....	87.2	87.2	89.0	88.1	84.8
Butterine.....	0.0	0.0	2.1	2.2	1.0
Stearine.....	24.0	36.0	38.0	25.0	35.6
Oleine.....	76.0	64.0	62.0	75.0	64.0
Coloring.....	Yes.	Yes.	Yes.	None.	Yes.
Date	Feb. 21,'91.	Aug. 20,'91.	Aug. 22,'91.	Aug. 27,'91.	Aug. 27,'91.
Serial	No. 16.	No. 25.	No. 26.	No. 27.	No. 28.

	No. 21.	No. 22.	No. 23.	No. 24.	No. 25.
Water.....	7.3%	10.2%	8.5%	10.5%	10.9%
Solids	92.7	89.8	91.5	89.5	89.1
Caseine	0.9	0.7	0.8	0.82	1.0
Salt	8.4	2.9	2.7	1.8	2.4
Fats.....	88.8	86.0	87.5	87.3	85.5
Butterine.....	2.0	1.5	1.2	1.5	1.8
Stearine.....	36.0	37.0	36.9	30.0	28.0
Oleine.....	64.0	62.0	62.6	69.0	71.5
Coloring.....	Yes.	Yes.	Yes.	Yes.	Yes.
Date	Sept. 29,'91.	Feb. 18,'92.	Feb. 18,'92.	Mch. 31,'92.	Mch. 31,'92.
Serial	No. 29.	No. 31.	No. 32.	No. 39.	No. 40.

VINEGAR.

The State of Ohio has no fixed legal standard of absolute acetic acid strength for vinegar, no matter what its origin may be. In the case of cider vinegar, the proportion of total solids must not fall below (2%) two per cent. The law further provides that no vinegar shall contain lead, copper, sulphuric acid or other ingredient injurious to health, or contain artificial coloring matter.

Cider vinegar is the most esteemed kind of vinegar; consequently, it is in greater demand, bringing better prices than any other vinegar; and it is therefore more frequently substituted. The commercial value of vinegars should be based upon the percentage of absolute acetic acid they contain. Malt, wine and low wine vinegars are commercially of higher value than cider vinegar, and in all probability, of greater sanitary value, owing to their higher percentage of acetic acid. Considered from a sanitary standpoint, they are preferable to most cider vinegars, which are most frequently produced from decayed and unripe apples. The percentage of total solids, whether produced from matter held in suspension or in solution, is no safe criterion for quality.

Regarding the restriction of the artificial addition of coloring matter, it might be observed that it frequently is a matter of impossibility for the chemist to decide whether the coloring, such as caramel, has been artificially added as so much coloring, or whether it was produced in the process of manufacturing. To condemn a product on this ground, would be doing an act of injustice to the manufacturer, and restrict a legal industry. There should be no complaint so long as the products are sold under their true name.

ANALYSIS OF VINEGAR.

Sample No 1. May 26, 1891—

Specific gravity at 18 deg. c.....	1.0043
Extractive. (Filtered liquid).....	0.434%

Serial No. 21—

Ash.....	0.095%
Coloring.	Caramel.
Absolute acetic acid.....	4.14%
Conclusions—Not cider or fruit vinegar.	

Sample No. 2—

Specific gravity at 18 deg. c.....	1.0086
Extractive. (Filtered liquid).....	0.635%

Serial No. 22—

Coloring.....	Caramel.
Absolute acetic acid.....	4.14%
Conclusions—Not cider or fruit vinegar.	

Sample No. 3. June 3, 1891—

Specific gravity at 15 deg. c.....	1.008
Extractive. (Filtered liquid).....	0.274%

Serial No. 23—

Ash	0.05%
Coloring.	Caramel.
Absolute acetic acid.....	3.3%
Conclusions—Not cider or fruit vinegar.	

Sample No. 4. June 3, 1891—

Specific gravity at 15 deg. c.....	1.004
Extractive. (Filtered liquid).....	0.45%

Serial No. 24.—

Ash.....	0.03%
Coloring	Caramel.
Absolute acetic acid.....	3.6%
Conclusions—Not cider or fruit vinegar.	

BAKING POWDER.

The use of the mixture known as "Baking Powder" is so general and of such importance in its application for the aeration of flour mixtures, that definite legal enactments would be desirable. The commercial value is of secondary importance since many of the substances which enter into baking powders of general consumption, are very deleterious to health. The practical value has been placed upon the quality of carbonic acid gas liberated upon the decomposition of baking powder, but losing sight of the injurious effects upon health produced by the accompanying products. Exhaustive investigations of baking powders in all their various combinations have definitely demonstrated their sanitary effect. The most reprehensible forms should be legislated out of existence. Medical opinion is a unit on the question, and their expression of disapproval should be honored by the enforcement of stringent laws.

ANALYSIS OF BAKING POWDER.

	Sample No. 1— Serial No. 80.	Sample No. 2— Serial No. 88.
Available carbonic acid gas.....	11.85%	7%
Bi-carbonate of soda.....	22.51	15
Alum	20.00	5
Starch	80.00	50
Sulphate, calcium, moisture.....	Present.	Present.
Acid, phosphate and alumina.....	None.	15%

Conclusion—No. 1 represents an alum powder; No. 2, mixed powder, being a phosphate and alum mixture. Both typical forms of the most injurious to health.

MAPLE SYRUP.

The sale of maple syrup is not controlled by any specific legislation, and consequently, any of its substitutes is considered under the general food and drug law. The standard of quality adopted for discrimination is that set forth in the third annual report by Prof. H. A. Weber.

ANALYSIS OF MAPLE SYRUP.

Serial No. 83, No. 1—

Grape sugar	1.9 %
Cane sugar.....	49.58
Dextrine.....	4.00
Chlorides.....	0.6
Ash, (sulphates).....	
March 1, 1892.	

Serial No. 84, No. 2—

Grape sugar.....	7.8 %
Cane sugar.....	82.0
Dextrine	0.5
Ash, (sulphate chloride).....	0.5
Mixture of glucose, maple and molasses.	
March 1, 1892.	

Serial No. 85, No. 3—

Grape sugar.....	10 %
Cane sugar.....	10
Dextrine.....	0.5
Ash, (sulphate chloride).....	0.5
Mixture of glucose and molasses.	
March 15, 1892.	

Serial No. 86, No. 4—

Grape sugar.....	10.0 %
Cane sugar.....	22.1
Dextrine.....	0.7
Ash, (sulphate chloride).....	0.5
Mixture of glucose, maple and molasses.	
March 21, 1892.	

Serial No. 86, No. 5—

Grape sugar.....	0.52%
Cane sugar.....	18.07
Dextrine.....	0.09
Ash, (sulphate chloride)	0.4
Mixture maple deprived of its sugar, "Skimmed Maple Syrup."	

Conclusions—The large percentage of chloride indicated the addition of molasses and further verified by the percentage of dextrine. The compound a mixture of molasses, cane sugar and glucose.

Respectfully submitted.

CHAR. T. P. FENNEL, PH. G., PH. D.,
Analytical and Consulting Chemist.

CLEVELAND, O.

HON. EDWARD BETHEL, *Dairy and Food Commissioner, Columbus, Ohio.*

DEAR SIR: I herewith submit my report as Assistant Dairy and Food Commissioner of the State of Ohio, for the third district, for the year ending November 15th, 1891.

The principal work in this district has been the enforcement of the pure food law. I have found it necessary in some few cases to prosecute, but only where there has been willful violation.

I have made as thorough inspections of food and drugs, as far as possible, as the limited amount of funds appropriated for this purpose would permit.

Dealers as a class show a readiness to conform to all the requirements of the food laws. Most of the adulterated food in our markets are brought from outside the State.

One of the greatest difficulties to contend with is the matter of legal advice. Section 3 of an act "To create the office of Dairy and Food Commissioner," reads as follows "And it shall be the duty of any prosecuting attorney in any county of the state, when called upon by said commissioner, or assistant commissioner to render him any legal assistance in his power to execute the laws, and to assist in the prosecution of cases arising under provisions of this act."

Experience has clearly demonstrated that the above is not expedient. A special attorney can make a study of the food laws, and be in such shape as to be a credit to the prosecution.

Prosecuting attorneys have never given much, if any, time to the technical questions which arise in regard to the food laws. Also, as a general thing, they are too closely allied to the interests of the people of their own county, and all of this is additional work, while there is no provision made for additional pay, and none of them are overpaid by their respective counties.

It sometimes become necessary to travel one or two hundred miles to consult about a case, and then find that the prosecutor, for some plausible reason, can not take hold of the case; but it is not so in all counties, as I have found men who are fearless in discharge of their duties, no matter whether it hits friends or enemies, whether political or personal. And right here I desire to return thanks to Hon. W. B. Neff, of Cuyahoga county; Hon. A. D. Metz, of Wayne county, and Chas. Lawler, of Ashtabula county, for valuable assistance and advice, cheerfully given me during the past year.

I would again call attention to suggestions made in the last annual report on page 23.

OLEOMARGARINE.

The laws of May 17th, 1886, and March 8th, 1888, regulating the manufacture and sale of oleomargarine, have been complied with in this district during the year. The case brought against Frank Seither for violation of the act of March 7th, 1890, was decided in favor of the defendant and dismissed.

However proper the decision of the jury in this case may have been, it shows sympathy on the part of a large portion of the public with honest dealers who sell oleomargarine as such, and is another indication that the situation will not warrant more arrests under this statute until the supreme court of the state passes upon it.

The purpose of the legislature in enacting the law of March 7, 1890, was evidently to inform illiterate persons, and those versed only in some foreign language, of the character of the goods when they were sold—the label required by act of May 17, 1886, not being sufficient in such instance. Owing to the seeming impracticability of this statute, as to what construction should be put on it, I would recommend that a law be enacted compelling dealers in oleomargarine, “in quantities less than original packages as put up by the manufacturer,” to use an outside wrapper, colored pink, properly labeled and making it an offense, punishable by fine, to use similar color wrapping paper for pure butter.

This, I think, would serve the purpose of the act of March 7, 1890, and be much more easily enforced.

COFFEE.

There has been a marked improvement in the ground coffee in the market. All the manufacturers of mixed coffee in this State have gladly and willingly lived up to the law. Every package sent out by them is marked either with the word “mixture” or “compound.” I found an imitation coffee berry on sale during the summer, but by serving notice on the wholesale dealers, the sale has been discontinued. The berry consisted of flour mixed with glucose, and was roasted and moulded in the form of the genuine berry.

MAPLE SYRUP.

The excellent law bearing on this product has been well lived up to. I was obliged to prosecute one manufacturer for failing to label cans, but this is the only violation that came under my notice during the year.

OLIVE OIL.

Of four samples examined, purchased in different drug stores, two were found to be adulterated, neither containing any olive oil, but being a good quality of cotton seed oil. The dealers will be prosecuted.

VINEGAR.

I have had but one complaint during the year, and upon investigation found that a St. Louis firm had shipped a quantity into this State, branded and marked “fruit vinegar,” which it originally was, but had been reduced below the standard by the addition of whisky vinegar. Upon serving notice upon them, they immediately removed same outside the State.

SUGAR.

Of a large number of samples inspected, all were found to be pure; and it is one of the few articles of food in which, I think I can safely say, no attempt at adulteration is made.

JELLIES.

The great bulk of jellies on the market is made from apples, with different fruit flavors added, but they are free from coloring matter and are sold as flavored jellies.

MILK.

There has been a marked improvement in the quality of milk in this district during the past year, but it requires constant watching to keep it in this shape.

It is not an easy matter to drive adulterated milk from the market, as there are a number of producers who do not hesitate to skim and water their milk, taking the chances that the consumer will not be able to discover the impurity.

I have had quite a number of complaints about adulterated milk, and, upon having analysis made of samples of same, commenced prosecutions, and succeeded in securing conviction in every case but one. These prosecutions had the effect of stopping adulterations in the vicinity where they have been brought, but it has demonstrated that unless continually followed up there are some dairymen who will adulterate their milk.

The scarcity of ice during the past summer made it difficult and expensive for producers and dealers to handle milk, and keep it sweet until it reached the consumer. This caused the use of several so-called preservatives, which are deleterious to health; I accordingly served notice on all dealers in the same, and their general use has been discontinued.

CHEESE.

A number of samples of cheese have been examined, and found to be of good quality. Skim milk cheese, as a general thing, has been branded as such. I have made inquiries among dealers and find no complaint.

DRUGS.

The inspection of drugs has received a considerable share of my attention. There has been a great improvement in this line, brought about without resorting to prosecution. My method has been to serve notice on offending druggists, and this has proved very satisfactory.

It is certainly evident that drugs, above every other article, should possess the highest quality of purity; for upon them depend, in a large measure, the public health.

There should be a larger appropriation for chemists, especially for this branch of work.

I do not wish to claim that there are no impure or adulterated food products or drugs on the market, or that every person handling these goods has been prosecuted or notified to desist; yet I feel that, as far as possible, and with the limited means at my disposal, there has been a great improvement in all of these articles. There are in this district many cities and villages, any one of which would keep one man busy the year round. Each district should have help enough to have the entire district covered at least once in three months, but of course this can not be done unless the appropriations are much larger.

It is for the interest of every citizen that the dairy and food laws should be properly enforced, and there should be no hesitation on the part of the Legislature to enlarge the appropriation for this purpose.

I desire to return my thanks to Director of Police J. W. Gibbons, of this city, for assistance cheerfully given me in discharge of my duties.

Very respectfully,

H. H. HYMAN,
Assistant Dairy and Food Commissioner.

CLEVELAND, O., January 15, 1891.

HON. HERBERT H. HYMAN, *Assistant Dairy and Food Commissioner, Cleveland, Ohio:*

DEAR SIR: I have the honor to submit the following report, embracing both a summary of my analytical work for the State Dairy and Food Commission, together with such observations relating thereto as I deem of sufficient importance to the Commission and the public for whom we serve.

The following samples were received in the order as enumerated and the nature of the analysis desired, together with results arrived at, are tabulated. (See page 32).

BAKING POWDER.

The first analysis, No. 1, I would call your attention to, because the symptoms of poisoning, such as vomiting, cramps, etc., while found not due to any metallic poison, can readily be attributed to the family partaking of heavy half-baked dough, and pork sausages together. Had nothing but yeast been used, and the yeast been inert and not raised the dough, the heavy bread would have been equally as indigestible and produced the same results; for it is well known that the very object of lightening the bread with yeast or baking powder is to make it more digestible. The baking powder in question had been standing on the shelf for years and lost its gas, and consequently its bread-raising power. This analysis I am told has been corroborated by State Analyst, Prof. H. A. Weber, of Columbus.

The public mind has been so much disturbed and perhaps alarmed by the published conflicting opinions of eminent chemists, touching the subject of baking powders, that I deem it best to allay unnecessary fear and prejudice by a statement of such facts as are incontrovertible and worthy of credence.

THE VALUE OF CHEMISTS' OPINIONS ON BAKING POWDERS.

The U. S. Government has gone to great expense to investigate and report on the subject of baking powder, and in their latest report, "Bulletin No. 13, Foods and Food Adulterants, Part Fifth"—investigations instituted in the U. S. Department of Agriculture, by Dr. H. W. Wiley, Chief Chemist, and his assistant, Prof. C. A. Crampton—after reviewing the cream of tartar, soda, phosphate of lime, alum and ammonia questions as to their effects, the conclusion is reached, that the *opinion* of the chemist should be accepted *only as to the ingredients he finds present*; but his opinion is of no value on questions of hygiene or physiology; thus we read, p. 570, U. S. Bulletin No. 13—"The question of the *relative* harmfulness of these different salts in the residue of baking powders is really one for the physiologist or hygienist to decide, *not the chemist*. Physiological experiment alone can decide them positively."

ADULTERATION OF BAKING POWDERS.

U. S. Bulletin No. 13, above referred to says, p. 564:

"ADULTERATION.—There is no recognized standard for the composition of a baking powder, either in this country or abroad. To prove from a legal point of view that a powder is adulterated, it would be necessary to show that it contained some substance injurious to health."

Before the law each side is heard on their *merits*, not on the public prejudice. The opinion of eminent physiologists whom I have questioned on this subject is, that in the small quantity in which baking powders enter the system, they can not produce any effect that would be in the least harmful, the system soon accommodating itself to slight changes, the same as it does to change of diet, air, climate, etc.; even the same medicine soon loses all effect for the same reason.

Article.	Complaint, if any.	Nature of analysis desired.	Result of analysis.
1. Baking powder	Suspected to contain some metallic poison, producing symptoms (after eating biscuits together with pork sausage), of vomiting and cramps	Examine for metallic poison	No metallic poison. Totally deficient in carbonic acid gas.
2. Oleomargarine	Suspected to be such	Verification desired	Oleomargarine.
3. Ground coffee	Sold as pure. Adulteration suspected	Examine as to constituents	Coffee; 37½%; chicory, peas and grain, 62½%.
4. Maple syrup	" "	" purity	Pure.
5. Butter	" "	" "	Pure, but old and rancid.
6. Ground coffee	" "	" "	Coffee; 25%; chicory, peas and wheat, 75%.
7. "	" "	" "	" 19
8. "	" "	" "	" 10
9. Cider vinegar	" "	" "	Almost entirely glucose vinegar and a little cider vinegar.
10. Maple syrup	" "	" "	Pure.
11. Baking powder	A very disagreeable odor	Examine for cause and constituents. No injurious effects reported	Sour starch.
12 } 10 samples of vine- to } gar	Sold as cider vinegar. Adulteration suspected	Examine as to purity	Each sample almost entirely glucose vinegar with small amount of cider vinegar.
24 } Two samples butter 25 } 26 } Candy—13 samples to } from various mfrs. 39 }	Sold as pure. Adulteration suspected	" "	Pure, but extremely rancid.
	Sold as pure. Some suspected to contain terra alba	" "	All pure.

Against a monument of evidence furnished by the yearly consumption in the United States of 75 million pounds of baking powder, of which 25 millions may be estimated as containing ammonia, 25 millions containing alum, and 25 millions pure cream of tartar—all used without any traceable injurious effects on the system—against all this evidence of *innocent result*, some chemists wish to place their opinion, unsupported by physiologists or hygienists, and unsupported by a single trustworthy instance of *injurious results*. The conclusions reached by the U. S. Government investigation I commend to the common sense of the people—there is no cause for alarm.

ALUM IN BAKING POWDERS.

U. S. Bulletin No. 13, p. 574: "Whether the absorption of small quantities of alum into the human system would be productive of serious effects is *still* an open question and one that careful *physiological* experiment alone can decide." Referring to Professor Mallet's chemical experiments, the U. S. Government chemist adds, p. 574: "I may say most of those based upon purely chemical work I can indorse, having confirmed many in my own work, but I think the evidence furnished by his physical work is hardly sufficient to justify his conclusion as to the harmfulness of such powders."

Gen. S. H. Hurst, formerly Ohio Dairy and Food Commissioner, is quoted—U. S. Bulletin No. 13, p. 578—thus: "And yet this is a question about which 'doctors disagree'; any number of conflicting opinions and certificates can be had from eminent chemists on either side of this question. The official investigation of this class of baking powders made in England resulted in their favor."

Thus, I should conclude that here also, the highest government authority after enormous expense and special research with the most advanced methods, covering the whole question of baking powders, aware of its importance through its enormous consumption, has come to the conclusion that there is absolutely nothing to show that alum baking powders are more harmful than other kinds, or are in fact in the least injurious to health.

AMMONIA IN BAKING POWDERS.

All chemists admit that theoretically ammonia is entirely driven off during the baking, the dough when properly baked being practically free from ammonia. The powerful pungent odor of ammonia makes the housekeeper *recognize* extremely minute quantities, if still present and being evaporated while the biscuit is hot. Yet such quantities are mere traces, infinitesimal in weight and practically harmless in result. Ammonia has been recommended for the nerves, as a smelling salt, for the hair, for the bath, is used as a washing fluid and the quantity absorbed from any such use would be far greater than from its use in the proportions found in baking powders. Furthermore, if, for the carbonate of ammonia which is volatile, other manufacturers substitute more of non-volatile alkali, such as bicarbonate of soda, to produce the same bread-raising power, together with more of other non-volatile chemicals to disengage the gas from the soda, from a purely theoretical view the physiological effect of the increased soda compound that would remain in the dough, would be far more energetic and injurious than from the dough containing the merest trace of the ammonia compound with correspondingly less of the soda compound; *always provided*, such a thing were possible, as injurious effects from either in these quantities.

Hassall, an English writer, than whom no authority on food and food adulteration is more esteemed or oftener quoted, is referred to in the U. S. Bulletin, No. 13, p. 573, on this subject: "Of these by far the best is carbonate of ammonia. This is a volatile salt, and its great advantage is that it is entirely or almost entirely dissipated by the heat employed in the preparation of bread." Commenting on this the U. S. Government chemist adds: "Doubtless in the small quantities used in baking powders, and in

the presence of other chemicals, there is little danger of its being left in the bread undecomposed."

Lately, I have seen several statements from baking powder manufacturers that seem to be as if aiming to frighten the public, ladies especially, by asserting that the use of ammonia in baking powders will result in blotches and ruined complexions. Such statements are without the slightest foundation, in fact, are not corroborated by physiologists or hygienists and the public should place no faith in them whatever

It would be equally as wrong and misleading to the public to claim that because cream of tartar is a poison in large quantity, and "Taylor on Poison," gives a record of deaths from its excessive use (3 or 4 ozs.), and physiologists claim "in small repeated doses it impairs digestion," that therefore cream of tartar should not be used in baking powders, or that because it is a well-known physiological fact that cream of tartar is converted in the blood into carbonate of potash (pearl ash), it would be right to frighten the public into the false belief that each time they eat a biscuit made with a pure cream of tartar baking powder they are introducing concentrated lye into their system! The real truth, as before stated, is that the system soon accustoms itself and apparently thrives on small amounts of any thing that might in great quantity be regarded as a poison.

THE PUBLIC PRESS ON BAKING POWDERS.

Those who read the newspapers, if they but reflect, will see that many statements regarding baking powders which they print are only advertisements; and the makers, like those who make quack medicines, are at liberty to exalt *themselves* within the limit of the space they pay for. The newspaper is not in a position to judge regarding expert or professional opinions expressed by the advertiser and treats all alike. To the credit of the more independent newspapers it may be said that in the general reading matter, for which they assume a greater direct moral responsibility, their aim is rather to guide and instruct the public as correctly as possible, but not to *mislead*, often rivaling each other in furnishing the latest accurate knowledge, and if they do allow any advertisements to appear in the guise of general reading matter, its quality and character must be and should be unimpeachable. Newspapers often attack the very quacks and humbugs of any kind, who may previously have had large advertisements in their columns until they were discovered and exposed.

CONCLUSIONS ON THE BAKING POWDER QUESTION.

Since it is conceded by the highest government authority that there is no standard of strength or purity for baking powders, and therefore impossible to prosecute for adulteration, it must be a useless expense for the State to analyze them except on actual specific complaints as to injurious effects.

The wholesale analysis of baking powders or other compounds when no standard of purity can be established, simply to determine their composition and publish the same, where no specific injurious effects are complained of, and their sale could not be suppressed, should be done by such firms as *desire* the analysis for comparison; and such enormous expense should not be saddled upon the State to be garbled by private concerns and called "official" for their benefit. The State law limits the annual appropriation for analytical work to not more than three hundred dollars each for three chemists. Complaint has often been made in the public press that the interests of the farmer are injured by adulterations and substitutions, especially butter, milk and dairy products. These farmers, the honest manufacturers of *our own State*, as well as the public, are entitled to the utmost protection against dishonesty from abroad or at home, and their products, being natural and not compounded, have positive standard of purity, practically attainable by any maker, and maintainable by law. A wild goose-chase after baking powders, without apparent direct benefit or necessity, with an extremely limited

appropriation, might order it impossible, for want of funds, to prosecute investigations into dairy and other products. I deem it best to call your attention in detail to these facts for possible future guidance, because reports of other State analysts show an enormous amount of work and money expended in this utterly futile and misguided direction; futile because no prosecutions resulted therefrom and no sales have been prohibited; and misguided because no specific complaints were made requiring analysis.

Let the great and small baking powder manufacturers apply and pay for public self-praise in the newspapers, and also to the outside chemists for their indorsement. The State Dairy and Food Commissioner should not be obliged to furnish them free advertisements in their reports, and analyses of their own and rival brands to compare with.

OLEOMARGARINE.

I believe it will be possible to furnish the public with a simple test, which will be inexpensive and rapidly made, whereby this compound can readily be distinguished from butter or if mixed with butter in small proportions, but I hope to report thereon later. I would suggest that the Dairy and Food Commission be authorized to print wrappers which for the bare cost should be charged, to be purchased by the honest butter makers of the State, whereby their product can be distinguished—counterfeiting which would be a felony, and by its universal use the public would be looking for only such butter as had such a wrapper. More and more butter makers would get to using them and "Ohio Butter" would be in demand for the greater safety thus secured. Some such plan with all details developed would succeed in limiting the sale of oleomargarine to such people as demand it by preference, and while it is a serious question as to the legality of preventing the sale of oleomargarine from one State to another, the sale of butter can be protected by such trade marks of the United States, backed by the authority of the state, that Ohio farmers can be protected all over the United States.

GROUND COFFEE.

Four samples were analyzed. I did not feel satisfied with the published methods for separating and determining the ingredients, and as one party at least threatened to allow the case to go into the courts, a test simple to explain and positive in its operation, so as to satisfy the average jurymen was what I sought and devised as follows:

Coffee, when roasted, has a specific gravity much lighter than the usual adulterants. Roasted chicory, peas, grain (wheat), all are heavier but each has a different specific gravity, so that by weighing a given quantity of ground coffee, and stirring it into a liquid of light specific gravity, that of 0.960 (chloroform 1 volume and alcohol 4 volumes), the *coffee only* floats at the surface and is separated and dried, then weighed. Next pouring off the balance of the liquid from the dregs, let them dry and stir them into other liquids of varying specific gravities in which only one of various adulterants will float, while the rest will sink. Thus, roasted wheat sinks in a liquid of the sp. gr. .999 (chloroform 1 volume, alcohol 3 volumes); roasted chicory sinks in a liquid of the sp. gr. 1.097 (chloroform 2 volumes, alcohol 3 volumes), but will therefore float the wheat; roasted peas sink in a liquid of the sp. gr. 1.272 (chloroform 2 volumes, alcohol 1 volume), but will float the chicory. If there are no other adulterants than the peas left, they, of course, need not be floated, but separated as they are from the rest, are dried and weighed. When each kind of article is separated and can be examined by the jury by taste, and external likeness of each particle, they are satisfied at once. In fact the defendant in this case, having been told by somebody that the ingredients could not be separated and coffee analysis was all theoretical, very likely based his determination to try the courts upon the uncertainty of such a test, but when he was told as to the nature of the test that had been made it seemed to have much to do with his at once pleading guilty without trial.

MAPLE SYRUP.

Regarding maple syrup, all the samples tested were free from adulteration of glucose, and, so far as an analysis can determine, practically pure. It is to be regretted that no extremely rigid test is known whereby adulteration by admixture with cane sugar or syrup made from cane sugar can be detected; furthermore, there is no legal standard of purity or concentration, limiting the minimum amount of saccharine matter a gallon of syrup should contain. As it now is, maple syrup may be thick or thin, according to the amount of water boiled out or added as the case may be, and it may vary in *true value*, 25 to even 50 per cent., yet the honest man would have to compete before the public on the same basis. Each gallon of maple syrup ought to be made to weigh a certain uniform weight, allowing as a practical limit, a range of perhaps 5 to 10 per cent. for lack of absolutely correct weights and measures.

VINEGAR.

Complaints of buyers in most instances were verified and the so-called cider vinegars were found to be glucose or distillery vinegars, perhaps flavored with a very small amount of cider vinegar, but below the standard of purity and strength provided by law to be commercially sold as cider vinegars.

BUTTER.

The samples analyzed were all rancid and complaints are justified on the ground that as an article of food, rancid butter is more objectionable than oleomargarine. Samples Nos. 24 and 25 had an unbearable odor, but they were free from adulteration.

CANDY.

Complaint was made that *terra-alba* was used contrary to law by manufacturers of cheap goods, but goods bearing the labels of local manufacturers were purchased near schools, yet they were all found pure. To find mere traces of poison in the coloring matter in so small proportions as to show that no harmful results will follow, I do not think is of sufficient weight to alarm the public, because minute traces of equally as poisonous matter can be found in the air we breathe, the food we must eat without being able to purify it, and materials that are manufactured with chemicals such as sugar, glucose, etc., may retain traces of poison that practically can not be removed, yet can do no harm, and the greatest proof that they do *not* lies in the fact that millions of pounds are consumed daily and people seem to thrive without complaint of health authorities to show that a large share of sickness all over the world has the same nature, not the la grippe nor other diseases traceable to germ or other positive causes, but some poisonous matter in the food. No such general condition exists and no general alarm need be felt. Specific cases are soon brought to light and traced to prevent further mischief.

DRUGS AND MEDICINES.

This branch of the work, while it has been started later than the rest, so as not to be included in the work ending with the year's work of which this report treats, shows that it will be advisable to warn druggists throughout the State that the law requiring all preparations they make, in fact all drugs and medicines which are defined by the U. S. Pharmacopœia, to answer to the requirements of the Pharmacopœia, and all preparations made according to label, to be as described by that label.

Thus, out of four cases recently observed, bottles marked as olive oil, were found to contain, in two cases out of four, cotton seed oil, showing that the labels in these cases should have been the so-called sweet oil which answers for any bland sweet oil, but

olive oil only can be dispensed when the druggist sells and labels what he sells as olive oil. I would suggest that the law be so modified as to require drugs and medicines if sold under a name recognized by the U. S. Pharmacopœia, to *practically* conform to its requirements for strength or purity, and not *absolutely* to do so, as is now required; my reasons are that errors exist in the present one as to methods of preparation, tests for purity, etc. (which keep on being improved upon), so that the thoroughly conscientious druggist is liable to be advertised in the newspapers as violating the adulteration law, and his business may be ruined, while in actual fact, to comply with the requirements of the Pharmacopœia would result in endangering the lives of the public.

The decision of the judge in the *nux vomica* case lately, in New Jersey, where the evidence of professional men of the highest standing, absolutely proved that a tincture of *nux vomica* had been made *practically* up to the evident intentions of the framers of the U. S. Pharmacopœia, but *absolutely* by a different process, superior in every respect; yet in spite of the judge believing this was the case, the druggist was held guilty of technically violating the law. To guard against such a decision, I most urgently suggest the law be amended, so that practical results shall be all that the State demands of any one, and so that the State shall not be placing the lives of its citizens in greater danger by the observance of its laws than by their violation.

Appreciating the trust, and thanking you for your confidence and hearty co-operation, I am
Respectfully yours,

NATHAN ROSEWATER,
Chemist to the Ohio Dairy and Food Commission.

CLEVELAND, O., February 16, 1892.

The HON. H. H. HYMAN, *Assistant Dairy and Food Commissioner:*

DEAR SIR: Below find tabulated list of analysis of samples of milk, submitted to me February 6, 1892:

ANALYSIS OF MILK.

No. inspection.	Name of producer.	Sp. grav	Solids.	Fats.	Ash.	Water.	Date of analy's.
11,122.....	Manny.	1 0320	11.38	2 10	0.60	88.62	Feb. 6, 1892.
11,123.....	" morning	1.0315	11.66	2 56	0.75	88.84	"
11,124.....	C. Mayhew..	1.0335	11.78	2.15	0.61	88.22	"
11,125.....	Edgerton ...	1.0329	12.25	2 70	0 78	87.75	"
11,126.....	Mixed milk	1.0340	12.30	2.60	0.73	87.70	"

Every sample is below standard in both solids and fats, and indicates skimming and watering.

Respectfully.

JOSEPH MELLOR, M. D.

CLEVELAND, O., March 21, 1892.

HON. H. H. HYMAN, *Assistant Ohio Dairy and Food Commissioner* :

DEAR SIR: I hereby beg to submit a table of the examinations of specimens of food products and drugs, together with the following summary of the work to date:

Name of substance examined.	Examined for—	Result.
No. 1—Olive oil.....	Purity & pharmacopœia tests.....	Does not conform to any of the U. S. P. tests.
" 2— "	Purity & pharmacopœia tests.....	Pure.
" 3— "	Purity & pharmacopœia tests.....	" Partial failure of the nitrate of mercury test.
" 4— "	Purity & pharmacopœia tests.....	Does not conform to any of the U. S. P. tests
Wampole's Perf'd and Tasteless Prep'tion of Cod Liver Oil.....	Conformity to label and claims on wrapper	Contains no cod liver oil, the other ingredients claimed are present.
No. 15—Vinegar	Legal requirements.....	Answers the legal requirements, 201% solid residue and 5.4% acetic acid.
No. 3—Oleomargarine—contains lard, suet, butter and cream	" "	Lard with traces of suet, butter, coloring, salt, water, and curd indicating milk or cream.
No. 4—Oleomargarine, contains lard, suet, butter and cream	" "	" " "
No. 5—Oleomargarine, contains lard, suet, butter and milk	" "	" " "
No. 6—Oleomargarine, contains lard, suet, butter and cream	" "	" " "
No. 7—Oleomargarine, contains lard, suet, butter and cream	" "	" " "
No. 8—Oleomargarine, contains lard, suet, butter and cream	" "	" " "
No. 9—Oleomargarine, contains lard, suet, butter and cream	" "	" " "

The suggestions previously made with reference to modifying the present law in regard to the proper labeling of all drugs and medicines, whereby they will not be considered adulterated if they are labeled as articles recognized by the U. S. Pharmacopœia, and practically conform to the tests and requirements of said text-book. It is true that every druggist, wholesale or retail, is able to provide a proper label setting forth the superiority of his process or his deviation from the Pharmacopœia, stating the points of difference or waiving the claim that the preparation is made to conform to the tests of this book; but this is not practical, whereas a change of the law would be better for the public and lessen the burden imposed on the druggists who desire to keep within the law and still serve the public with the most advanced methods and the highest art.

A general belief prevails that food products that are compounds must, according to strict interpretation of the law, be labeled with the names and amount of each ingredient. This would be an injustice of which manufacturers would have good reason to complain, as it would compel them to part with their private property for which perhaps they have had to pay large sums of money, and which they value above price, parting therewith by such enforced publication, without compensation. A careful study of the wording of the law shows that this is not the case, but that if such articles are compounds and are plainly labeled as compounds, they are not compelled by law to state the proportions and ingredients contained. They must prove to be what they claim upon the label—if labeled as a wheat compound it must contain wheat; if a coffee compound it must be a compound containing coffee or else be classed as adulterated. The section referring to those compounds that have the names of ingredients and formula printed on them simply states that if the correct formula is on and the ingredients not injurious to health, they shall not be considered as adulterated. I have perhaps dwelt at too great length upon this point, but consider the subject one that the makers and dealers in such articles should be clearly informed on.

I must call your attention to an error on my part in heretofore reporting on several samples of butter, which in fact were *simply putrid*, but this being only due to age and rancidity and not adulterated in a chemical sense (not mixed with any thing else), I placed them on my report as "pure but old and rancid." I find that the report should have read: "Adulterated," according to Sec. 36, paragraph 5, H. B. No. 56, which also declares any article to be adulterated "if it consists wholly or in part of a diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance or article, whether manufactured or not." I regretted at the time that nothing could be done to prevent the vending of such goods and am glad to see that the law interprets the word "adulterated" so as to protect the public in every respect.

Of the four samples labeled olive oil, two were adulterated with cotton seed oil. They failed to answer the tests for purity of the U. S. Pharmacopœia, though these tests are not considered to be beyond criticism. The druggists as a rule do not apply these tests when they purchase their goods and therefore should make their labels read so that they differ in some manner from the names given in the Pharmacopœia whenever they dispense such preparations whose extreme purity or accurate conformity to the tests of their text-books they are not willing to accept together with the legal consequences.

The sample of Wampole's Tasteless Preparation of Cod Liver Oil I found contained no cod liver oil whatever, and as this is a typical case in which a preparation purporting to be composed largely of cod liver oil, and containing none, is advertised and sold by thousands of dealers ignorant of this fact, I repeat the conclusions arrived at and my reasons for the same as follows: "I therefore find the statements on the descriptive circular which I quote as follows, to be contrary to the facts as proven by the analysis, viz: 'The oil in this preparation is in *positive solution* and the taste is so very skillfully and carefully disguised that it can not possibly be detected.' 'Each tablespoonful represents one teaspoonful of Pure Norwegian Cod liver Oil.' There being no 'oil' in this preparation, it can not be said to be 'in positive solution,' nor carefully and skillfully disguised, nor that a tablespoonful represents a teaspoonful of the oil itself; it can not be claimed to represent all the curative agents, and it is doubtful if it can be claimed to contain all the soluble curative agents extracted from cod liver oil. Not only does this circular and label directly misrepresent the facts, but by the prominence given to the words cod liver oil, and the inferences often and variously repeated, the public (who are not versed in technical distinctions) will be led to infer that this preparation actually contains all of the cod liver oil amounting to 25% of the whole volume skillfully combined and disguised in taste, to the discredit and damage of reputable druggists and chemists competing; whereas upon closer inspection of parts of this descriptive circular and label the inference may be drawn that this preparation does not contain the pure oil, but only some of its elements (and by inference iodides and phosphorus only) that are found in minute proportions.

I am of the opinion that this preparation is not what it is absolutely nor by inference represented to the public to be, by its label, wrappers, etc.

As a drug, this preparation should be considered adulterated, according to paragraph 3, section 3, under which a drug is considered adulterated "if its strength, quality or purity falls below the professed standard under which it is sold."

The quantity of butter and beef fat in the samples of oleomargarine numbered from 3 to 9 inclusive, appeared to be only a very small fraction of the whole, which under the microscope showed a field of nearly pure lard. A trace of cotton seed oil was found by chemical test, which was probably due to the makers purchasing lard adulterated with this oil, or the oleo-oil used was itself adulterated.

Thanking you for the confidence you have reposed, and the uniform courtesy I have received, I am

Very respectfully yours,

NATHAN ROSEWATER, *Chemist.*

POISON IN MAPLE SYRUP.

ASHTABULA, O., April 13, 1892.

HERBERT H. HYMAN, Esq., *Assistant Dairy and Food Commissioner, Cleveland, Ohio:*

DEAR SIR: I forward you this day, prepaid, part can of maple syrup, per American Express. This can, part full, was purchased of a grocer, and made by one Knapp, of Sheffield, Ohio, as per label on can.

The contents of this can have poisoned seven persons. Four are at the point of death, and one now may not recover.

Would you kindly take the matter in hand and have this syrup sent you analyzed and tested, and prosecute the man who made it?

CHLORIDE OF ZINC IN MAPLE SYRUP.

CLEVELAND, OHIO, April 17, 1892.

HON. H. H. HYMAN, *Assistant Ohio Dairy and Food Commissioner:*

DEAR SIR: The maple syrup upon analysis contains very nearly half a grain ($\frac{1}{2}$ gr.) of chloride of zinc in each fluid ounce, or over sixty (60 gr.) grains to the gallon of syrup.

In estimating the quantity a person would likely eat at a meal as three (3) or four (4) fluid ounces, the result would hardly prove fatal to adults of robust health, but under any ordinary circumstances would cause distress of the alimentary canal, and might, if continued, produce chronic poisoning.

The full analysis will be submitted as soon as possible.

As the taste of this poison is scarcely perceptible in maple syrup, and perhaps also in other canned goods that are highly flavored and sweet, I would suggest calling public attention of makers of cans and those who fill them with food products, to the careless use of the ordinary soldering fluids, and the imperative necessity of washing the new cans out with water before using them.

The wholesale condemning of such canned goods as show sufficient traces of zinc, due to failure to observe the proper precaution of cleanliness, would at once put a stop to the evil results that would otherwise follow.

Yours respectfully,

NATHAN ROSEWATER, *State Chemist.*

APPENDIX.

CIRCULAR No 1.

OFFICE OF DAIRY AND FOOD COMMISSIONER,

STATE HOUSE, COLUMBUS, OHIO, *May 5, 1892.*

To the People of the State of Ohio:

Having the honor to be the first Dairy and Food Commissioner elected by the people of the State, and Ohio being the first State in the Union to raise the office to the dignity of an elective department in State government.

Upon assuming the duties of the office, I deem it just to all those engaged in the production, manufacture or sale of foods, drinks or drugs and to all others concerned that I issue this circular in some measure setting forth the general policy expected to be followed in exercising the powers and duties of the office, and in executing the laws of the State against fraud and deception in the manufacture and sale of foods, drinks and drugs.

The enormous profits in trade, the injuries to public health and the degradation of the business morals of the people, arising from cheapening and degrading the quality and efficiency of what we eat and drink, demands the earnest consideration of every civilized government to-day.

The fact that the illegitimate and unearned profits of these adulterations in our country are greater than the entire cost of running our government, saying nothing of the injury to health and morals, has been the incentive to legislative enactments against such practices. With the Legislature alone rests the authority to determine what shall constitute an offense against the public in this regard and what penalty shall be placed upon violators of the law.

The enforcement of these statutes is laid upon this office, and, as the incumbent for the time, it will be my purpose to enforce all statutes to the letter as far as ability, time and the fund at my disposal will permit, believing that the Legislature enacted the laws for the purposes of enforcement and not for evasion; and in no case have I the right to substitute

that which I or any other person may think ought to be, for what the Legislature has said shall be.

My predecessor assumed that because it was physically impossible to inspect all the food and drug products of the State, and because the appropriations for the support of the commission were so meagre, that a passive policy was intended and prosecutions should only be made upon individual complaints.

I take it that when the law says I shall inspect articles of food it means I shall actively pursue that line of work whether any individual asks me to or not. And when the law says I shall prosecute where violations are found, it means I shall do so regardless of the personal preferences of any one.

Hence, it shall be my policy to find the violations and then punish the violators so far as I am able. I shall try to do this without harshness or undue severity.

Recognizing the vast commercial interests involved in this issue and the immense capital that is behind them, together with the generally prevailing idea that *all profits are legitimate*, I in some measure appreciate the enormity of the task before me. With a firm conviction of right and a determination to do that which shall be for the best interest of all the people, I take up the trust asking such and only such withholding of judgment and leniency of criticism as the difficulties confronting me will warrant from an indulgent public. To answer repeated inquiries and to prevent the plea of ignorance upon the part of violators of the law, I have hereunto attached a compilation of the laws governing this department; also the laws I am called on to enforce.

Respectfully,

F. B. McNEAL,
Dairy and Food Commissioner.

LAWS AGAINST FRAUD AND DECEPTION
IN THE
MANUFACTURE AND SALE OF FOODS, DRINKS AND DRUGS.

AN ACT

Amendatory of and supplementary to an act entitled "An act to provide for the election of an Ohio dairy and food commissioner, salary and expense," as passed May 1, 1891, (O. L., vol. 88, pp. 496 and 497), and as amended March 29, 1892.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That sections 8035, 272 and 275, as amended May 1, 1891 (O. L., vol. 88, pp. 496 and 497), and as amended March 29, 1892, be amended so as to read as follows:

Sec. 8035, 272. That there is hereby created the office of dairy and food commissioner of the state of Ohio. Said commissioner shall be elected at the general election held on the first Tuesday after the first Monday in November, A. D. 1891. He shall take his office on the first Tuesday after the first Monday in May after his election, and shall serve for two years, and until his successor is elected and qualified.

He shall be charged with the enforcement of all laws against fraud and adulteration or impurities in foods, drinks or drugs in the state of Ohio.

His salary shall be fifteen hundred (\$1,500) dollars per year, and his necessary and reasonable expenses incurred in the discharge of his official duties, to be paid in monthly installments at the end of each calendar month.

Sec. 8035, 275. Said commissioner may appoint not to exceed two assistant commissioners, whose salaries shall be one thousand dollars per year, and necessary traveling expenses incurred in the discharge of their official duties, to be paid in like manner with the commissioner, and on itemized vouchers approved by said commissioner.

The said commissioner shall have power to employ such experts, chemists, agents, inspectors and counsel as may by him be deemed necessary for the proper enforcement of the laws; their compensation to be fixed by the commissioner.

All charges, accounts and expenses authorized by this act shall be paid out of the state treasury upon vouchers certified by the commissioner, and upon warrant of the state auditor. The entire expenses of said commissioner shall not exceed in any one year the amount appropriated for such purposes.

All vacancies in the office of dairy and food commissioner shall be filled by appointment of the governor, until the next general election, when the same shall be filled as in the original election.

All fines assessed and collected under prosecutions begun or caused to be begun by the commissioner shall be paid by the court to the commissioner, and by him paid into the state treasury, and be credited to a fund hereby appropriated for the use of the commissioner.

Said commissioner shall be furnished a suitable office room in the capitol building, to be furnished and set apart for his use by the adjutant-general, in which he shall keep all books, records, registers and all other property belonging to the office, and turn the same over to his successor in office. The office of the commissioner shall be entitled to stationery and other supplies to be furnished by the secretary of state, in like manner as the same are furnished to other state officers.

The commissioner shall make annual reports to the governor containing itemized statements of all receipts and disbursements, and all persons employed by him, together

with such statistics and other matter as he may regard of value. Said reports to be published as are the reports of other state officers.

SECTION 2. An act entitled "An act to provide for the election of an Ohio dairy and food commissioner, salary and expense," passed May 1, 1891, as amended March 29, 1892, and all laws or parts of laws not in accordance with the provisions of this act are hereby repealed.

SECTION 3. This act shall take effect and be in force from and after its passage. Passed April , 1892.

AN ACT

To require the Ohio dairy and food commissioner to give bond.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the Ohio dairy and food commissioner before entering upon the discharge of his official duties, shall give bond in the sum of five thousand dollars to the state, with two or more sureties to the acceptance of the governor, conditioned that he will truly account for and apply all moneys or other property which may come into his hands in his official capacity, and for the faithful performance of the duties of his office as the same are prescribed by law; which bond with his oath of office indorsed thereon, shall be filed with the secretary of state.

SECTION 2. This act shall take effect and be in force from and after its passage. Passed March 4, 1891.

ADULTERATION OF FOOD AND DRUGS.

AN ACT

To provide against the adulteration of food and drugs.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That no person shall, within this state, manufacture for sale, offer for sale, or sell any drug or article of food which is adulterated, within the meaning of this act.

SECTION 2. * * * The term "food," as used herein, shall include all articles used for food or drink by man, whether simple, mixed or compound.

SECTION 3. An article shall be deemed to be adulterated within the meaning of this act: * * *

(a.) In the case of drugs: (1.) If, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality or purity laid down therein; (2.) If, when sold under or by a name not recognized in the United States Pharmacopœia but which is found in some other pharmacopœia, or other standard work on materia medica, it differs materially from the standard of strength, quality or purity laid down in such work; (3.) If its strength, quality or purity falls below the professed standard under which it is sold.

(b.) In the case of food: (1.) If any substance or substances have been mixed with it, so as to lower or depreciate, or injuriously affect its quality, strength or purity: (2.) If any inferior or cheaper substance or substances have been substituted wholly or

in part for it; (3.) If any valuable or necessary constituent or ingredient has been wholly or in part extracted from it; (4.) If it is an imitation of, or is sold under the name of another article; (5.) If it consists wholly, or in part, of a diseased, decomposed, putrid, infected, tainted or rotten animal or vegetable substance or article, whether manufactured or not—or, in the case of milk, if it is the produce of a diseased animal; (6.) If it is colored, coated, polished or powdered, whereby damage or inferiority is concealed, or if by any means it is made to appear better or of greater value than it really is; (7.) If it contains any added substance or ingredient which is poisonous or injurious to health; provided, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles or ingredients of articles of food, if *each and every package sold or offered for sale be distinctly labeled as mixtures or compounds, with the name and per cent. of each ingredient therein, and are not injurious to health.*

SECTION 4. Every person manufacturing, offering or exposing for sale, or delivering to a purchaser any * * * articles of food included in the provisions of this act, shall furnish to any person interested, or demanding the same, who shall apply to him for the purpose, and shall tender him the value of the same, a sample sufficient for the analysis of any such * * * articles of food which is in his possession.

SECTION 5. Whoever refuses to comply, upon demand, with the requirements of section 4, and whoever violates any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction shall be fined not exceeding one hundred nor less than twenty-five dollars, or imprisoned not exceeding one hundred, nor less than thirty days, or both. And any person found guilty of manufacturing, offering for sale or selling an adulterated article of food * * * under the provisions of this act, shall be adjudged to pay in addition to the penalties hereinbefore provided for, all necessary costs and expenses incurred in inspecting and analyzing such adulterated articles of which said person may have been found guilty of manufacturing, selling or offering for sale.

SECTION 6. This act shall take effect and be in force in forty days from and after its passage.

Passed March 20, 1884.

AN ACT

To prevent fraud in canning fruit and vegetables.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That it shall hereafter be unlawful in this state for any packer or dealer in preserved or canned fruits and vegetables, or other articles of food, to offer such canned articles for sale after January 1, 1886, with the exception of goods brought from foreign countries or packed prior to the passage of this act, unless such articles bear a mark to indicate the grade or quality, together with the name and address of such firm, person or corporation that pack the same, or dealer who sells the same.*

SECTION 2. That all soaked goods, or goods put up from products dried before canning, shall be plainly marked by an adhesive label, having on its face the word "soaked" in letters not less in size than two-line pica, of solid and legible type; and all cans, jugs, or other packages containing maple syrup or molasses, shall be plainly marked by an adhesive label, having on its face the name and address of the person, firm or corporation who made or prepared the same, together with the name and quality of the goods in letters of the size provided in this section.

SECTION 3. Any person, firm or corporation who shall falsely stamp or label such cans or jugs containing preserved fruit or food of any kind, or knowingly permit such false stamping or labeling, and any person, firm or corporation who shall violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and punished with

a fine not less than \$50 in the case of vendors, and in the case of manufacturers, and those falsely or fraudulently stamping or labeling such cans or jars, a fine of not less than \$500 nor more than \$1,000; and it shall be the duty of any board of health in this state, cognizant of any violation of this act, to prosecute any person, firm or corporation which it has reason to believe has violated any of the provisions of this act, and after deducting the costs of trial and conviction, to retain for the use of said board the balance of the fine or fines recovered.

SECTION 4. This act shall take effect January 1, 1886.

Passed April 29, 1885. Amended April 8, 1886,

AN ACT

To prevent adulteration of and deception in the sale of dairy products, and supplementary to Chapter II, Title I, Part 4, of the Revised Statutes.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That no person shall sell, exchange, expose or offer for sale or exchange, any substance purporting, appearing, or represented to be butter or cheese, or having the semblance of either butter or cheese, which substance is not made wholly from pure milk, or cream, salt and harmless coloring matter, unless it be done under its true name, and each vessel, package, roll or parcel of such substance has distinctly and durably painted, stamped, stenciled, or marked thereon the true name of such substance in ordinary bold-faced capital letters, not less than five-line pica in size, and also the name of each article or ingredient used or entering into the composition of such substance, in ordinary bold-faced letters, not less than pica in size, or sell or dispose of in any manner to another any such substance without delivering with each amount sold or disposed of, a label on which is plainly or legibly printed in ordinary bold-faced capital letters not less than five-line pica in size, the true name of such substance, and also the name of such articles used and entering into the composition of such substance in ordinary bold-faced letters, not less than pica size, if the same be not made wholly from pure milk, or cream, salt and harmless coloring matter.

SECTION 2. No person or persons shall manufacture out of any oleaginous substance or substances, or any compound of the same other than that produced from unadulterated milk or cream, salt and harmless coloring matter, any article designed to be sold as butter or cheese made from pure milk or cream, salt and harmless coloring matter. Nothing in this section shall prevent the use of pure skimmed milk in the manufacture of cheese.

SECTION 3. No person or persons shall manufacture, mix, compound with or add to natural or pure milk, cream, butter or cheese, any animal fats, animal, mineral or vegetable oils, nor shall any person or persons manufacture any oleaginous or other substance not produced from pure milk or cream, salt and harmless coloring matter, or have the same in his possession, or offer or expose the same for sale or exchange with intent to sell or in any manner dispose of the same as and for butter and cheese made from unadulterated milk or cream, salt and harmless coloring matter, nor shall any substance or compound so made be sold or disposed of to any one as and for butter or cheese made from pure milk or cream, salt and harmless coloring matter.

SECTION 4. No person or persons shall sell, exchange, expose or offer for sale or exchange, dispose of or have in his possession any substance or article made in imitation or resemblance of, or as a substitute for any dairy product which is falsely branded, stenciled, labeled or marked as to the place where made, the name or cream value thereof, its composition or ingredients, or in any other respect.

SECTION 5. No person or persons shall sell, exchange, expose or offer for sale or exchange, dispose of or have in his possession any dairy products which are falsely branded, stenciled, labeled or marked as to the place where made, date of manufacture, the name or cream value thereof, composition or ingredients, or in any other respect; and cheese made wholly from skimmed milk shall have branded on the box or can "made from skimmed milk."

SECTION 6. Every person in this state who shall deal in, keep for sale, expose or offer for sale or exchange, any substance other than butter or cheese made wholly from pure milk or cream, salt and harmless coloring matter, which appears to be, resembles, or is made in imitation of, or as a substitute for butter or cheese, shall keep a card not less in size than eight by ten inches, in a conspicuous and visible place, where the same may be easily seen and read in the store, room, stand, booth, wagon or place where such substance is, on which card shall be printed in bold, black, Roman letters, not less in size than eight-line pica, the true name of such substance, with the words "imitation butter, or imitation cheese, sold here."

SECTION 7. Every proprietor, keeper, or manager, or person in charge of any hotel, boarding-house, restaurant, eating-house, lunch counter, or lunch room who therein sells, uses, or disposes of any substance which appears to be, resembles, or is made in, or as an imitation of, or is made as a substitute for "butter or cheese," under whatsoever name, and which substance is not wholly made from pure milk or cream, salt and harmless coloring matter, shall display and keep a card in a conspicuous place, where the same may be easily seen and read in the dining, eating, restaurant and lunch room, and place where such substance is sold, used or disposed of, which card shall be in size not less than eight by ten inches, upon which shall be printed in plain, bold, black letters, not less in size than eight line pica, the true name of such substance, and also the words "imitation butter, or imitation cheese, sold and used here," and such proprietor, keeper, manager or person in charge shall not sell, furnish or dispose of such substance as and for "butter and cheese" made from pure milk or cream, salt and harmless coloring matter, when butter or cheese is asked for.

SECTION 8. No person or persons shall pack, box, inclose, ship or consign any substance, as butter or cheese made from pure milk or cream, salt and harmless coloring matter, in such a manner as to conceal an inferior article by placing a finer grade of butter or cheese upon the surface of the same.

SECTION 9. No person or persons shall sell to any person, or deliver or carry or cause to be carried to any cheese or butter factory to be manufactured, any milk diluted with water or in any way adulterated, or from which any cream has been taken, or milk commonly known as "skimmed milk," or milk from which [the] part known as "stripings" has been withheld with the intent to defraud, or keeps or renders any false account of the quantity or weight of milk furnished at or to any factory for manufacture or sold to any manufacturer.

SECTION 10. No person or persons shall sell, exchange, or offer for sale or exchange, any unclean, impure, unhealthy, unwholesome milk, or sell, exchange, or offer for sale or exchange as "pure milk," milk diluted with water, or milk known as skimmed milk.

SECTION 11. No person or persons shall sell, exchange, expose, or offer for sale or exchange, have in his possession or dispose of in any manner, any milk which is falsely branded, labeled, marked or represented as to grade, quantity or place where produced or procured.

SECTION 12. No person shall keep cows for the production of milk for any purpose, in a cramped or unhealthy condition, or feed them on unhealthy food, or upon food that produces impure, unhealthy or unwholesome milk.

SECTION 13. No person shall manufacture, sell, exchange, expose or offer for sale or exchange, any condensed milk, unless the package, can or vessel containing the same shall be distinctly labeled, stamped or marked with its true name, brand, by whom and under what name made, and no condensed milk shall be made, exchanged, exposed or

offered for sale or exchange, unless the same be made from pure, clean, healthy, fresh, unadulterated and wholesome milk, from which the cream has not been removed, or unless the proportion of milk solids contained in the condensed milk shall be in amount the equivalent of 12 per centum of milk solids in crude milk, and of such solids, 25 per centum shall be fat.

SECTION 14. No butter or cheese not made wholly from pure milk or cream, salt and harmless coloring matter, shall be used in any of the charitable or penal institutions of the state.

SECTION 15. Any person or persons violating any of the provisions or sections of this act shall, upon conviction thereof, be fined not less than fifty or more than two hundred dollars for the first offense, or for each subsequent offense not less than one hundred dollars or more than five hundred dollars, and be imprisoned not less than ten days or more than ninety days, or both.

SECTION 16. One-half of all fines collected under any of the provisions of this act shall be paid over to the person or persons furnishing information under which conviction is procured.

SECTION 17. That section 7089 of the Revised Statutes and acts of April 13, 1881, vol. 78, page 130, and April 26, 1881, vol. 78, page 198, amendatory and supplementary of section 7090, and the act to prevent the manufacture and sale as butter of oleomargarine and other similar substances, passed April 27, 1885, vol. 82, page 159, are hereby repealed.

SECTION 18. This act shall take effect on its passage.

Passed May 17, 1886.

AN ACT

To regulate the branding of cheese in the state of Ohio and to prevent fraud in its manufacture and sale.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That every manufacture of cheese in the state of Ohio shall have upon the sale thereof, distinctly and durably stamped in full faced capital letters upon each and every such cheese by whatever style or name known, the grade of the same as "Ohio full cream," "Ohio state cheese," "Ohio standard" or "Ohio skimmed," as hereinafter provided for, together with the name of the city, village or town where such cheese was manufactured.

SECTION 2. Such cheese only as shall have been manufactured from pure and wholesome milk from which no portion of the butter fats have been removed by skimming or any other process, and in the manufacture of which neither butter nor any other animal or vegetable fats or oils have been used, nor any fats which have been extracted from milk in any form and returned for the purpose of filling the cheese, shall be stamped "Ohio full cream." All cheese manufactured as above required from pure and wholesome milk, but from which a portion of the butter fats have been removed, shall, if it contain not less than seventy-five per centum of pure butter fats, be stamped "Ohio state cheese." All cheese manufactured as above required from pure and wholesome milk, but from which a portion of the butter fats have been removed, shall, if it contain less than seventy-five per centum of butter fats and not less than forty per centum of butter fats, be stamped "Ohio standard." All cheese containing less than forty per centum of butter fats shall be stamped "Ohio skimmed."

SECTION 3. The stamp provided for in this act designating the grade of cheese shall be such as to produce an impression not less than three inches in width and not less than five inches in length, and the words "Ohio full cream," "Ohio state cheese," "Ohio standard" or "Ohio skimmed," together with the name of the factory and the

name of the city, village or town where such factory is located, the whole to be included within a full heavy border. Ordinary stamping ink, red, green, purple or violet in color and of such composition as not to be easily removed or wholly obliterated by moisture, shall be used in stamping as provided in this act.

SECTION 4. Any manufacturer of cheese who shall sell or dispose of any cheese without being stamped as required by this act, or who shall falsely stamp the same, and any dealer or other person who shall remove, deface or obliterate such stamp from any cheese so stamped, shall, upon conviction thereof, be fined not less than twenty-five dollars nor more than one hundred dollars for the first offense, and for each subsequent offense not less than one hundred dollars and not more than three hundred dollars and pay the costs of prosecution.

SECTION 5. This act shall take effect and be in force from and after June 1, 1892.
Passed 1892.

AN ACT

To prevent deception in the sale of dairy products and to preserve the public health.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That no person, by himself or his agent, or his employe, shall render or manufacture for sale out of any animal or vegetable oils, not produced from unadulterated milk or cream from the same, any article in imitation or semblance of natural butter or cheese produced from pure unadulterated milk or cream from the same, nor compound with, or add to milk, cream or butter any acids or other deleterious substance, or animal fats, or animal or vegetable oils not produced from milk or cream, so as to produce any article or substance, or any human food, in imitation or semblance of natural butter or cheese, nor shall sell, keep for sale or offer for sale any article, substance or compound made, manufactured or produced in violation of the provisions of this section, whether such article, substance or compound shall be made or produced in this state or elsewhere.

SECTION 2. For the purpose of this act the terms "natural butter and cheese," "natural butter or cheese produced from pure unadulterated milk or cream from the same, butter and cheese made from unadulterated milk or cream, butter or cheese, nor product of the dairy," and butter or cheese, shall be understood to mean the products usually known by the terms butter and cheese, and which butter is manufactured exclusively from pure milk or cream, or both, with salt and with or without any harmless coloring matter, and which cheese is manufactured exclusively from pure milk or cream, or both, with salt and rennet, and with or without any harmless coloring matter or sage. It is further provided that nothing in this act shall be construed to prohibit the manufacture or sale of oleomargarine, in a separate and distinct form, and in such manner as will advise the consumer of its real character, free from any coloring matter or other ingredient causing it to look like or appear to be butter, as above defined.

SECTION 3. Whoever violates the provisions of this act shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars, nor more than five hundred, or not less than six months' nor more than one year's imprisonment, for the first offense, and by imprisonment for one year for each subsequent offense.

SECTION 4. This act shall take effect from and after the first day of May, 1890.
Passed March 7, 1890.

AN ACT

To regulate the sale of milk.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That whoever, by himself or by his servant or agent, or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession with intent to sell or exchange, or exposes or offers for sale or exchange, adulterated milk, or milk to which water or any foreign substance has been added, or milk from diseased or sick cows, shall, for a first offense, be punished by a fine of not less than fifty nor more than two hundred dollars; for a second offense, by a fine of not less than one hundred dollars nor more than three hundred dollars, or by imprisonment in the work-house for not less than thirty nor more than sixty days; and for a subsequent offense, by a fine of fifty dollars, and by imprisonment in the work-house of not less than sixty nor more than ninety days.*

SECTION 2. *Whoever, by himself or by his servant or agent, or as the servant or agent of any other person, sells, exchanges or delivers, or has in his custody or possession, with intent to sell or exchange, or exposes or offers for sale as pure milk, any milk from which the cream or part thereof has been removed, shall be punished by the penalties provided in the preceding section.*

SECTION 3. *No dealer in milk, and no servant or agent of such a dealer, shall sell, exchange or deliver, or have in his custody or possession, with intent to sell, exchange or deliver, milk from which the cream or part thereof has been removed, unless in a conspicuous place, above the center, upon the outside of every vessel, can or package, from which or in which such milk is sold, the words "skimmed milk" are distinctly marked in uncondensed gothic letters not less than one inch in length. Whoever violates the provisions of this section shall be punished by the penalties provided in section 1.*

SECTION 4. *In all prosecutions under this chapter, if the milk is shown upon analysis to contain more than eighty-seven per cent. of watery fluid, or to contain not less than twelve and one-half per cent. solids, not less than one-fourth of which must be fat, it shall be deemed, for the purpose of this chapter, to be adulterated, and not of good standard quality, except during the months of May and June, when milk containing less than twelve per cent. of milk solids shall be deemed to be not of good standard quality.*

SECTION 5. *This act shall take effect and be in force from and after its passage.*
Passed April 10, 1889.

AN ACT

To amend section four of an act entitled an act to regulate the sale of milk, passed April 10, 1889. (Vol. 86, pages 229, 230.)

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That section 4 of an act entitled an act to regulate the sale of milk, passed April 10, 1889 (vol. 86, pages 229 and 230), be so amended as to read as follows:*

Sec. 4. *In all prosecutions under this chapter, if the milk is shown upon analysis, to contain more than eighty-seven per cent. of watery fluid, or to contain less than twelve and one-half per cent. solids, nor [not] less than one-fourth of which must be fat, it shall be deemed, for the purpose of this chapter, to be adulterated, and not of good standard quality, except during the months of May and June, when milk containing less than twelve per cent. of milk solids shall be deemed to be not of good standard quality.*

SECTION 2. *That said section four, as passed April 10, 1889, be and the same is hereby repealed.*

SECTION 3. *This act shall take effect and be in full force from and after its passage.*
Passed January 30, 1891.

AN ACT

To amend sections 6 and 7 of an act passed May 17, 1886 (O. L., pp. 178, 179 and 180, vol. 83), amended March 21, 1887 (pp. 182, 183, vol. 84, O. L.), to prevent adulteration and deception in the sale of dairy products.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That sections 6 and 7 of the above named act, passed May 17, 1886, amended March 21, 1887, be amended so as to read as follows :

Sec. 6. Every person in this state who shall deal in, keep for sale, expose or offer for sale or exchange, any substance other than butter or cheese made wholly from pure milk or cream, salt and harmless coloring matter, which appears to be, resembles or is made in imitation of, or as a substitute for butter or cheese, shall keep a card not less in size than ten by fourteen inches, in a conspicuous and visible place where the same may be easily seen and read in the store, room, stand, booth, wagon or place where such substance is, on which card shall be printed, on a white ground, in bold, black, Roman letters, not less in size than twelve-line pica, the words, "oleomargarine" or "imitation cheese," (as the case may be) "sold here," and said card shall not contain any other words than the ones above prescribed ; and no person shall sell any oleomargarine, suine, imitation cheese, or other imitation dairy product, at retail or in any quantity less than the original package, tub or firkin, unless he shall first inform the purchaser that the substance is not butter or cheese, but an imitation of the same.

Sec. 7. Every proprietor, keeper, or manager, or person in charge of any hotel, boarding house, restaurant, eating house, lunch counter or lunch room, who therein sells, uses, or disposes of any substance which appears to be, resembles, or is made in or as an imitation of, or is made as a substitute for butter or cheese, under whatsoever name, and which substance is not wholly made from pure milk or cream, salt and harmless coloring matter, shall display and keep a card in a conspicuous place, where the same may be easily seen and read in the dining, eating, restaurant, and lunch room, and place where such substance is sold, used, or disposed of, which card shall be white and in size not less than ten by fourteen inches, upon which shall be printed in plain, bold, black Roman letters, not less in size than twelve-line pica, the words, "oleomargarine sold and used here," or "imitation cheese sold and used here" (as the case may be), and said card shall not contain any other words than the ones above described, and such proprietor, keeper, manager, or person in charge shall not sell, furnish, or dispose of such substance as and for "butter and cheese," made from pure milk or cream, salt and harmless coloring matter, when butter or cheese is asked for.

SECTION 2. That sections 6 and 7 of the above named act, as amended March 21, 1887, be and the same are hereby repealed.

SECTION 3. This act shall take effect on its passage.

Passed March 8, 1888.

ADULTERATION OF LIQUORS, ETC.

Section 7882 of the Revised Statutes provides that: "Whoever adulterates for the purpose of sale, any spirituous, alcoholic or malt liquors, used or intended for drink or medical or mechanical purposes, with coculus indicus, vitriol, grains of paradise, opium, alum, capicum, copperas, laurel water, logwood, Brazilwood, cochineal, sugar of lead, aloes, glucose, tannic acid, or any other substance which is poisonous or injurious to health, or with any substance not a necessary ingredient in the manufacture thereof; and whoever sells or offers or keeps for sale any such liquors so adulterated, shall be fined in any sum not less than twenty nor more than one hundred dollars, or be imprisoned not

less than twenty nor more than sixty days, or both, at the discretion of the court. And any person guilty of violating any of the provisions of this section, shall be adjudged to pay, in addition to the penalties hereinbefore provided for, all necessary costs and expenses incurred in inspecting and analyzing any such adulterated liquors, of which said party may have been guilty of adulterating or selling, or keeping for sale, or offering for sale."

Passed March 25, 1882.

MANUFACTURING OR SELLING POISONED LIQUORS.

Section 7083 of the Revised Statutes provides that: "Whoever uses any active poison in the manufacture or preparation of any intoxicating liquor, or sells in any quantity any intoxicating liquor so manufactured or prepared, shall be imprisoned in the penitentiary not more than five years, nor less than one year." [54 v. 183.]

ADULTERATION OF WINE.

Section 7081* of the Revised Statutes provides against the adulteration of native wines, as follows: "Whoever adulterates any wine made, or juices expressed from grapes grown within the state of Ohio, by mixing therewith any drugs, chemicals, cider, whisky, or other liquor, and whoever sells, or offers to sell, any such adulterated wine or grape juice, knowing the same to be adulterated, shall be fined in any sum not more than three hundred dollars nor less than fifty dollars." [62 v. 179.]

ADULTERATION OF CANDY.

AN ACT

To provide against the adulteration of candy.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That no person shall manufacture for sale, or sell or offer to sell any candy adulterated by the admixture of terra alba, baryta, talc, or other mineral substance, or poisonous colors or flavors, or other ingredients, deleterious or detrimental to health.

SECTION 2. Every person manufacturing candy, or offering or exposing the same for sale, shall furnish to any person interested or demanding the same, who shall apply to him for that purpose, and shall tender him the value of the same, a sample sufficient for the analysis thereof.

SECTION 3. Whoever refuses to comply, upon demand, with the requirements of section 2, and whoever violates any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction, shall be fined not exceeding one hundred dollars nor less than twenty-five dollars, or imprisoned not exceeding one hundred nor less than thirty days, or both: and he shall be adjudged to pay in addition, all necessary costs and expenses incurred in the inspecting and analyzing such adulterated candy, and the same shall be forfeited and destroyed under the direction of the court.

SECTION 4. This act shall take effect upon its passage.

Passed May 8, 1886.

AN ACT

To amend section[s] 1 and 2 of an act entitled "An act to prevent the adulteration of vinegar," passed March 21, 1887 (Ohio Laws 84, 216), and to repeal section three of said act.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That sections 1 and 2 of an act entitled "An act to prevent the adulteration of vinegar," passed March 21, 1887, be amended so as to read as follows:

Sec. 1. That no person shall manufacture for sale, or knowingly offer or expose for sale as cider, apple, or orchard vinegar, any vinegar not the legitimate product of pure apple juice, known as apple cider; or vinegar not made exclusively of said apple cider; or vinegar into which foreign substances, drugs, or acids have been introduced as may appear by proper test, and upon said test shall contain not less than two per cent. by weight of cider vinegar solids upon full evaporation over boiling water.

Sec. 2. No person shall manufacture for sale, or knowingly offer for sale, or have in his possession with intent to sell, any vinegar found upon proper test to contain any preparation of lead, copper, sulphuric acid, or other ingredients injurious to health, or containing artificial coloring matter.

Sec. 4. Every person making or manufacturing cider vinegar, who is not a domestic manufacturer of cider or cider vinegar, shall brand on each head of the cask barrel or keg containing such vinegar the name and residence of the manufacturer, the date when same was manufactured, and the words "Cider Vinegar." And no vinegar shall be branded "Fruit Vinegar" unless the same be made wholly from apples, grapes, or other fruit.

Sec 5. Whoever violates any of the provisions of this act, shall, upon conviction, be fined not less than fifty dollars nor more than one hundred dollars, or imprisoned not less than thirty days nor more than one hundred days, or both; and shall be adjudged to pay in addition all necessary costs and expenses incurred in inspecting and analyzing such vinegar. And all vinegar not in accordance with this act shall be subject to forfeiture and spoliation.

SECTION 2. Sections 1, 2 and 3 of an act passed March 21, 1887 (O. L. 84, p. 216), be and the same are hereby repealed.

SECTION 3. This act shall take effect and be in force from and after its passage.

Passed April 14, 1888.

AN ACT

To amend sections [section?] 3718a of the Revised Statutes of Ohio.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That section 3718a of the Revised Statutes of Ohio, be and the same is hereby amended to read as follows:

Sec. 3718a. Any justice of the peace, within his county and city, police judge or mayor of any city or village, within his city or village, shall have jurisdiction in case of violation of the laws, to prevent adulteration of food and drink, the adulteration and deception in the sale of dairy products and drugs and medicines, and any violation of the law for the prevention of cruelty to animals, or under section sixty-nine hundred and

eighty-four of the Revised Statutes, or section sixty-nine hundred and eighty-four-a thereof as herein enacted. If such prosecutions be before a justice of the peace, and a trial by jury be not waived, the said justice shall issue a venire to any constable of the county containing the names of sixteen electors of the county to serve as jurors to try such case and make due return thereof. Each party shall be entitled to two peremptory challenges, and shall be subject to the same challenges as jurors are subject to in criminal cases in the court of common pleas. If the venire of sixteen names be exhausted without obtaining the required number to fill the panel, the justice may direct the constable to summon any of the bystanders to act as jurors; provided, that in all cases prosecuted under the provision of this section (no costs shall be required to be advanced or paid by the person or persons authorized under the law to prosecute such cases); and provided further, that in all cases brought under the provision of this section, if the defendant be acquitted, or if convicted and committed in default of paying fine and costs, the costs of each case shall be certified under oath to the county auditor, who after correcting the same, shall issue [a] warrant on the county treasurer in favor of the person to whom such costs and fees shall be paid.

SECTION 2. The original section 3718a is hereby repealed.

SECTION 3. This act shall take [effect] from and after its passage.

Passed April 3, 1888.

AN ACT

To amend sections 1, 2, 3 and 4 of an act passed March 14, 1889 (O. L., vol. 86, p. 96), entitled "An act to define pure wines, wines, compounded wines and adulterated wines, and to regulate the manufacture and sale of compounded wines, and to prohibit the manufacture or sale of adulterated wines within the state of Ohio."

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio, That sections one, two, three and four of above named act be amended so as to read as follows:*

Sec. 1. That all liquors denominated as wine containing alcohol, "except such as shall be produced by the natural fermentation of pure, undried grape-juice," or compounded with distilled spirits, or by both methods, whether denominated as wine, or by any other name whatsoever, in the nature of articles for use as beverages, except as allowed in section four of this act, or for compounding with other liquors for such use, and all compounds of the same with pure wine, and all preserved fruit-juices compounded with substances not produced from undried fruit, in character of, or intended for use as beverages, and all wines (including all grades and kinds) which contain, or in the production or manufacture of which, any glucose, or uncrystallized grape or starch sugar, or cider, or pomace of grapes out of which the juice has been pressed or extracted, known as grape cheese, has been used, and all wines, imitation of wines or other beverages produced from fruit into which carbonic acid gas has been artificially injected, or which shall contain any alum, baryta, salts, caustic lime, carbonate of soda, carbonate of potash, carbonic acid, salts of lead, salicylic acid or any other antiseptic, coloring matter (other than produced from undried fruit, or pure sugar), essence of either or any foreign substance whatever, which is injurious to health, shall be denominated as adulterated wine, and any person or persons who shall manufacture, or cause the same to be done, with intent to sell, or shall sell or offer to sell, any of such wine or beverage, shall be guilty of a misdemeanor, and shall be punished by a fine of not less than two hundred dollars, or more than one thousand dollars, or be imprisoned in the county jail for a term of not less than thirty days nor more than six months, or by both such fine and imprisonment, in the discretion of the court, and shall be liable to a penalty of one dollar for each gallon thereof sold, offered for sale, or manufactured with intent to sell, and such wine or beverage shall be deemed a public nuisance and forfeited to the

state, and shall be summarily seized and destroyed by any health officer, marshal, constable or sheriff, within whose jurisdiction the same shall be found, and the reasonable expense of such seizure and destruction, not exceeding the amount paid for similar services, shall be a county charge, and paid out of the county treasury in the same manner as costs in criminal cases, where the state fails to convict, are now allowed and paid out of such treasury.

Sec. 2. For the purpose of this act the words "pure wine" shall be understood to mean the fermented juice of the undried grapes, without the addition thereto of water, sugar, or any foreign substance whatever; and all such wines shall be known as "pure wine," and shall be stamped, branded, labeled, designated and sold as "pure wine," and the name and kind of wine, and that of the locality where such wine is made, and of the manufacturer, may also be added; and it shall be unlawful to affix any stamp, brand or label containing the words "pure wine" (either alone or with other words) on any vessel, package, bottle or other receptacle containing any substance other than pure wine as in this section defined, or to prepare, or use on any vessel, package, bottle, or other receptacle containing any liquid, any imitation or counterfeit of such stamp, label or brand, or any stamp, label or brand of such form and appearance as to be calculated to mislead or deceive any person, or cause to be supposed that the contents thereof be pure wine, or to use any vessel, package, bottle or other receptacle, having such stamp, brand or label affixed thereon, except for pure wine, as in this section defined; and if the name of the manufacturer is added, then only of such manufacturer's make, providing the same is pure wine. And any person selling such wine shall in the invoice thereof plainly state and designate the same as "pure wine."

Sec. 3. For the further purpose of this act the word "wine" shall be understood to mean the fermented juice of undried grapes; provided, however, that the addition of pure white or crystallized sugar to perfect the wine, or the using of the necessary things to clarify and refine the wine which are not injurious to health, shall not be construed as adulterations, but such wines shall contain at least seventy-five per cent. of pure grape juice, and shall not contain any artificial flavoring whatever; and all such "wine" shall be known as "wine," and shall be stamped, branded, labeled and sold as "wine," in the same manner as is provided in section two of this act in case of pure wine, except the words in this case shall be "wine" without the prefix "pure;" and all the provisions of said section two, as far as applicable, shall govern the manufacture and sale of "wine" as in this section defined. And any person selling such wine shall in the invoice thereof plainly state and designate the same as "wine" without using the prefix "pure."

Sec. 4. For the further purpose of this act, the words "compounded wine" shall be understood to mean any wine which contains less than seventy-five per cent. of pure undried grape juice, and is otherwise pure, and all wines containing alcohol or any other distilled spirits not produced by the natural fermentation of pure undried grapes, such wine shall be known as compounded wine, and shall be branded, marked, labeled and sold as compounded wine, and the name of such wine may be added, or such wine shall be branded, labeled and marked by using the word "compounded" next preceding the name of such wine, such as "compounded sweet catawba," or "compounded port wine," or the like (and an addition of pure distilled spirits not to exceed eight per cent. of its volume shall not be taken to be an adulteration of such wine); and upon each and every package, barrel or other receptacle of such wine, which shall contain more than three gallons, there shall be stamped upon both ends of such package, barrel or other receptacle, in black printed letters at least one inch high and of proper proportion, the words "compounded wine" or the name of such wine, preceded by the word "compounded" as in this section provided, and upon all packages or receptacles in plain, printed black letters, at least one-half inch high, and of proper proportion, the words "compounded wine," or the name of such wine, preceded by the word "compounded" as in this section provided, and upon all packages, bottles or other receptacle of one quart or less, there shall be placed a label

securely pasted thereon, on which label the words "compounded wine," or the name of the wine, preceded by the word "compounded," shall be plainly printed in black letter at least one-fourth of an inch high and of proper proportion. Should any number of such packages or other receptacle be inclosed in a larger package, as a box, barrel, case or basket, such outside package shall also receive the stamp, "compounded wine" or the name of such wine, preceded by the word "compounded," the letters to be the size according to the amount of such wine contained in such outside packages. And any person selling wine of the kind this section defined, shall in the invoice thereof plainly state and designate such wine as "compound wine."

SECTION 2. Sections 1, 2, 3 and 4 of said act are hereby repealed; and this act shall take effect and be in force from and after its passage.

Passed March 26, 1891.

The following are the remaining sections of the original act (the first four being amended as above), which are still in force:

SECTION 5. Any person or persons who shall sell or offer for sale, or manufacture or cause the same to be done, with intent to sell any wine stamped, or labeled, or branded or designated in any manner as "pure wine," either by including the word "pure" with "wine" alone or in connection with other words, which is not "pure wine" as in section two of this act defined, or any wine stamped, or labeled or branded, or in any manner designated as "wine," but which is not wine as in section three of this act defined, or shall violate any provisions of said sections two and three of this act, or shall sell or offer for sale or manufacture, or cause the same to be done, with intent to sell any wine of the kind and character as described in the fourth section of this act, which shall not be stamped, marked or labeled after the manner and mode therein prescribed, or which is falsely stamped, or marked, or labeled, such person or persons shall be guilty of a misdemeanor, and shall be punished by a fine of not less than one hundred dollars or more than one thousand dollars for each and every offense, or by imprisonment in the county jail not less than thirty days, or more than six months, or both fine and imprisonment, in the discretion of the court, and in addition thereto shall be liable to a penalty of one-half dollar for each gallon thereof sold, offered for sale, or manufactured with intent to sell or offer for sale. All penalties imposed by this act, may be recovered with costs of action by any person in his own name, before any justice of the peace in the county where the offense was committed, where the amount does not exceed the jurisdiction of such justice; and such penalties may be recovered in the like manner in any court of record in the state, but on the recovery by the plaintiff in such case for a sum less than fifty dollars, the plaintiff shall only be entitled to costs to amount equal to the amount of such recovery. It shall be the duty of the prosecuting attorney of the respective counties of this state, and they are hereby required to prosecute or commence action in the name of the state of Ohio, for the recovery of the penalties allowed herein, upon receiving proper information thereof, and in actions brought by such prosecuting attorney, one-half of the penalty recovered shall belong to and be paid over to the person or persons giving the information upon which the action is brought, and the other one-half shall be paid to the treasurer of the county in which said action is brought, within thirty days from the time of its collection, and such money shall be placed to the credit of the poor fund of the town, city or township in which the cause of action arose, after paying therefrom a reasonable attorney fee to the prosecuting attorney prosecuting such suit, to be fixed and allowed by the court trying such cause. All judgments recovered in pursuance of the provisions of this act, with interest thereon, may be collected and enforced by the same means and in the same manner as judgments in other cases. Two or more penalties may be included in the same action.

SECTION 6. The provisions of this act shall not apply to medicated wines such as are put up and sold for medicinal purposes only; nor to currant wine or other wines made from fruits, other than grapes, which are plainly labeled, or branded, or designated and sold or offered for sale under names including the word wine, but also expressing distinctly the fruit from which they are made, as "gooseberry wine," "elderberry wine," or the like.

SECTION 7. This act shall take effect and be in force from and after September first next following its passage.

Passed March 14, 1891.

TWENTY-FIFTH ANNUAL REPORT
OF THE
OHIO STATE
HORTICULTURAL SOCIETY,
FOR THE YEAR 1891—92.

ORGANIZED IN 1847 AS OHIO POMOLOGICAL SOCIETY.

9 A. Appendix.

OFFICERS FOR 1892.

G. W. CAMPBELL, Delaware, O.....*President.*
O. W. ALDRICH, Columbus, O.....*Vice-President.*
W. W. FARNSWORTH, Waterville, O*Secretary.*
N. OHMER, Dayton, O*Treasurer.*

AD INTERIM COMMITTEE.

E. H. CUSHMAN.....Cuyahoga County.
W. J. GREEN .. Franklin County.
WM. MILLER .. Ottawa County.
B. F. ALBAUGH.....Miami County.
M. CRAWFORD.....Summit County.
S. R. MOORE.....Muskingum County.
G. W. TROWBRIDGE.....Hamilton County.
L. B. PIERCE.....Summit County.
J. G. BILDERBACK.....Holmes County.
JAMES EDGERTON.Belmont County.

STANDING COMMITTEES.

NOMENCLATURE.

GEO. W. TROWBRIDGE.....Crestvue, Hamilton County.
J. R. HURST, Chillicothe, Ross County.
GEO. W. CAMPBELL, Delaware, Delaware County.
N. OHMER, Dayton, Montgomery County.
DANIEL DUEB.....Millersburg, Holmes County.

ENTOMOLOGY.

PROF. F. M. WEBSTER.....Columbus, Franklin County.

FORESTRY.

PROF. W. R. LAZENBY.....Columbus, Franklin County.

ORNITHOLOGY.

L. B. PIERCE, Tallmadge, Summit County.

EXPERIMENT STATION.

GEO. W. CAMPBELL.....Delaware, Delaware County.
O. W. ALDRICH.....Columbus, Franklin County.
W. W. FARNSWORTH.....Waterville, Lucas County.

EXECUTIVE.

N. H. ALBAUGH.....Tadmor, Montgomery County.
W. R. LAZENBY, Columbus, Franklin County.
N. OHMER, Dayton, Montgomery County.

COLUMBIAN EXPOSITION.

N. H. ALBAUGH.....Tadmor, Montgomery County.
W. R. LAZENBY, Columbus, Franklin County.
N. OHMER, Dayton, Montgomery County.
GEO. W. CAMPBELL.....Delaware, Delaware County.
W. W. FARNSWORTH.....Waterville, Lucas County.

CONSTITUTION

OF THE

Ohio State Horticultural Society.

1st. This Society shall be known as the Ohio State Horticultural Society.

2d. Its object shall be to collect and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticulture and rural embellishments among the people.

3d. Its officers shall be a President, Vice-President, Secretary and Treasurer, who shall, in addition to their official duties, constitute a board, empowered to fill all official vacancies that may occur during the year by death or resignation. They shall be elected annually, by ballot, and hold their offices until their successors are elected; but the Secretary shall not enter upon the duties of his office until the first day of August following his election.

4th. The President shall preside and conduct all meetings of the Society, and in his absence the Vice-President shall perform the same duties.

5th. The Secretary shall record all doings of the Society, perform all correspondence, and, with the assistance of the President, collate and prepare the annual report and other matters for the public press.

6th. The Treasurer shall collect and hold all funds of the society, and pay out the same only on an order of the Secretary, countersigned by the President.

7th. The membership fee shall be one dollar per year, and any person may become a member of the Society by forwarding the fee to the Secretary or Treasurer. Each member shall be entitled to a copy of the annual report, when printed, and any other documents that may be printed for the use of the Society.

8th. There shall be an *Ad Interim* Committee, consisting of the officers of the Society and ten other members, residents of different sections of the State, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season in their several sections of the State, and report the same at the annual meeting of the Society. This committee shall also hold meetings at such times and places as the President and Secretary may direct, for the inspection of fruit and fruit crops, attending horticultural exhibitions, etc. a report of the observations of the committee to be published annually with the transactions of the Society.

9th. The annual meeting of the society shall open on the second Wednesday in December of each year, at such place as may be designated by a vote of the Society, notice of the time and place, together with the order of exercises, to be sent in due time to each member, by the Secretary. At this meeting the President will be expected to deliver an address, and the reports of the *Ad Interim* Committee, Secretary and Treasurer

will be read, and the usual business transacted, besides discussion on fruits and other topics.

10th. This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

RESOLUTIONS.

The following resolution was adopted by the Society, at its annual meeting, December, 1882:

Resolved, That the dues from each member of the Ohio State Horticultural Society shall be one dollar per year, payable annually in advance. Should any member become one year in arrears for dues, he shall be notified of that fact by the Secretary, when, if he does not pay to the proper officer such dues within six months after such notice, his name shall be stricken from the roll of members of the Society.

That the Secretary shall provide himself with two books, at the cost of the Society, in one of which he shall keep a record of all the names of the members, and in which he shall charge up to each member his annual dues. The other shall be a receipt book so arranged that the receipts therein shall show the time to which each member has paid his dues.

Resolution adopted at annual meeting, December, 1888:

Resolved, That in addition to the regular duties of the *Ad Interim* Committee, it shall be their special duty to solicit members for the State Horticultural Society.

MIDSUMMER MEETING.

The Society met at Catawba Island, Tuesday, August 18, 1891.

The meeting was called at 7 P. M. by President Campbell.

Wm. Miller, J. W. Gamble and W. N. Tracy were appointed committee of Arrangements, and L. B. Pierce, J. W. Maxwell and James Edgerton committee on Fruits.

Mr. N. Ohmer then read the following paper on "The Future of Commercial Horticulture":

Mr. President and Gentlemen of this Convention:

In the program sent out by our Secretary you will see that I am put down to open up the business end of this meeting. The subject given me is one that might properly be asked of a prophet instead of your humble servant, namely: "What of the future of commercial horticulture?" I suppose what is meant by the question is, will there be any money in the future in that line of business? I would say off-hand yes, for some, and no, for others. It is not to be expected that in the future we will realize as big profits for our product as has been the case in the past, and yet there will be seasons that the good cultivator will get good crops that will sell for good prices, because of the failure of many careless, lazy or slovenly cultivators, and in consequence of adverse weather or what would be called a bad season.

In my thirty odd years of experience in the growing of fruits, I realized the most money especially from the raspberry and blackberry in the seasons of least rainfall, or what is called a bad season.

There is but one element that I could not handle successfully, and that one was frost. I put that down in big letters. A number of times I went to bed at night with a magnificent prospect for fruit and got up in the morning to find my fruit all or mostly killed by frost. This I could not help, of course, or else I would have done so.

The man that will make money as a horticulturist in the future will be the one that will be industrious, wide awake and up to the times. He must not undertake too much, cultivate well, grow nice fruit, not too many varieties, put up the same in neat and honest, clean packages as good at bottom as on top. Get up a reputation such that customers will be more particular about the brand than about the price.

If there is any one thing that is disgusting to the purchaser of fruit, it is the buying of nice looking fruit in dirty or second-hand packages. You all know I am not in the box or basket business, therefore can speak plainly on the subject.

This subject is one upon which much can be said—my remarks are merely an opening of the subject, and hope many of you will participate in its discussion.

Mr. S. D. Gammel emphasized the importance of neatness and honesty in packing fruit.

Mr. E. H. Cushman asked what the small grower should do who packed his fruit conscientiously and found that it was "lumped off" with a lot of other fruit "snide packed," at the same price.

President Campbell had seen the same occurrence.

Mr. High had found the Champion grape profitable on account of its earliness. He cited an instance where fruit in an attractive package had sold for twice as much as the same fruit on the same day and place had brought in an improper package.

Mr. Vroman thought we were damaging ourselves by not putting better fruit on the market and thereby increasing the consumption thereof.

Mr. Ohmer mentioned the fine condition in which California fruit reached the eastern market after its long journey, owing to skillful packing.

Mr. Pierce spoke of the objection to putting the grower's name on a package that might be refilled with inferior fruit. He preferred cheap "gift" bushel crates.

Mr. S. W. Gamble, manager of one of the Catawba Island fruit companies, was called upon and said they proposed to maintain a ready market for their fruit by uniform grading (by a "grader"), honest packing and guaranteeing the fruit. They aim to deal directly with the retailer instead of through wholesalers. The work is systematized and each one has his special part to perform in the packing house, through which all the fruit passes.

W. J. Green, of the Ohio Experiment Station, then read the following paper:

INSECTICIDES AND FUNGICIDES.

[Read at Midsummer Meeting by J. W. GREEN, of the Ohio Experiment Station.]

This topic is far too extensive to admit of a full discussion; indeed it is not possible, in the present state of our knowledge, to elucidate it fully. Great advancement has been made within the past few years, but further experiments are necessary to settle some disputed questions. It has taken fully ten years to learn the relative merits of Paris green and London purple, and not until last year was the dispute settled. The accounts given by fruit growers as to the action of London purple on foliage of fruit trees have been very contradictory, and the discrepancies could not be harmonized on the supposition that more of the poison was used by one than by others. Its injurious effects seemed to be, in a great degree, irrespective of the quantity used. Professor Gillette, of Iowa, found that a soluble arseniate is very injurious to foliage, and Professor Bailey, of New York, has shown that London purple is slightly soluble. This explains why it is so uneven in its action, as the longer the mixture is allowed to stand the more would enter into solution, and the greater the harm. The kind of water used and the manner of spraying would also have influence. Paris green is not soluble, hence is not so variable in its action; but it is by no means true that all brands of this substance are alike, although it is a much safer article to use than London purple.

But the matter does not rest here, as a means has been discovered by which both Paris green and London purple are rendered harmless to foliage, even when used two or three times the ordinary strength. Mr. Weed found, at the Ohio Experiment Station, in 1889, that lime added to London purple rendered it harmless to foliage when used in

ordinary quantities. Gillette carried the question still further last season, in Iowa, and showed that it could be used even in excessive quantities and do no harm.

At the Ohio Station we have found, the present season, that lime added to Paris green has the same beneficial action, particularly when used on peach trees. London purple alone, in any quantity, can not be used with safety on peach and American varieties of plum trees; nor can Paris green much in excess of two ounces to fifty gallons of water. Even in such small quantity it is hardly safe; but when lime is added, the dose may be doubled without harm. The use of lime is one of the most important discoveries that have been made in recent years, and, strange as it may seem, but little has been said concerning it, and fruit growers generally are not familiar with the fact.

Now, that we have found how to use both London purple and Paris green, without harm to foliage, is there any choice between them? London purple is the cheaper, but Paris green has the advantage of being at the same time insecticide and fungicide, as it contains both arsenic and copper. For this reason it is to be preferred, where a combination is desired. It does not contain sufficient copper, but it is easy to add more in the shape of the carbonate or sulphate of copper. If used without lime, Paris green is better than London purple for fruit trees, and possibly all cases, because less liable to do harm.

There are still other important insecticides, but as they do not come within the scope of this paper the discussion of them will be omitted.

Fruit growers are becoming aware that they have other enemies besides birds and bugs. The unseen foes are quite as troublesome as those that are visible. Fungous diseases, that do not make their presence known until they have done their mischief, are to be met on the threshold and dispatched before they gain a foothold.

The horticulturist now needs to know something of botany and chemistry, and he finds this kind of knowledge even more useful than that venerable and venerated astronomical science that dealt with the moon's phases. He needs all sorts of machines and appliances, from a shotgun to a microscope. Fortunately, the means of dealing with these diseases that afflict plants are at hand and easily applied. There is still much to learn, but we may thank our stars that we know as much as we do. Copper, in some of its compounds, is the specific that I wish to call attention to, although it is not the only one. When sulphate of copper and sulphate of iron were first used for fungous diseases the sulphuric acid contained in them was supposed to be the agent of destruction; but it was soon found that sulphate of iron was of but little value, and that other compounds of copper besides the sulphate were efficient.

The question now is, what is the best form of copper to use, and how prepare it? Sulphate of copper dissolved in water is efficient, but can be used for winter treatment only, as it injures the foliage. Sulphate of copper in ammonia forming the well known eau-celeste, is also useful, but can be used on but few kinds of plants for the same reason. Modified eau-celeste, or eau-celeste with carbonate of soda, is a little safer, but it also burns the foliage of some plants. Various other preparations have been tried, but nothing seems to be so safe nor so efficient as the Bordeaux mixture. This can be used on almost all plants without harm, and its adhesive qualities are such that it excels all other compounds in rainy seasons. It is not without faults, however. The formula calls for six pounds of sulphate of copper, and the same quantity of lime, to twenty-two gallons of water. This makes it costly, and the lime clogs the nozzle to such an extent that much trouble is often experienced in using it. When used on grapes too late in the season, it coats the fruit so as to make it unsalable, although it does no harm in case the grapes are made into wine. The mixture has so many good qualities that it can hardly be dispensed with. By using it for one or two applications early in the season, and then substituting eau-celeste or carbonate of copper for the rest of the season, the result will be satisfactory. As to the cost of it, that can be lessened by reducing the strength to one-half or one-fourth, and possibly to one-eighth. The formula used by the Station this season is four pounds of copper sulphate, four pounds (or rather less) of lime, and

fifty gallons of water. This is but little more than one-fourth the strength of the original mixture, but it is perfectly effective. Some experiments indicate that this is still stronger than necessary; but for the first application in the spring, before the leaves open, in the treatment of anthracnose of the grape and raspberry, also apple and pear scab, a strong mixture should be used. Possibly the original formula is none too strong, but our success with four pounds to fifty gallons of water has been as good as could be desired. For the second application there can be no harm in using the stronger mixture, but for the cost of it, except on raspberries, which are so tender in foliage that even four pounds to fifty gallons injures the foliage to some extent, but not seriously. Possibly a still weaker mixture would work as well and do no harm, but that is not yet to be determined. If care is taken in preparing the Bordeaux mixture, to strain the lime water or milk of lime, and a vermored nozzle is used, there need be no trouble in applying it; especially is this true of the diluted mixture.

To succeed the Bordeaux mixture, there is probably nothing better than carbonate of copper dissolved in ammonia. It is, in fact, a good preparation to use throughout the season, as it is easily prepared, is cheap, and works well with any machine or nozzle. The price of carbonate of copper is sixty to seventy cents per pound, but it can be prepared for about one-fourth that sum. Dissolve twenty-five pounds of sulphate of copper in hot water; also thirty pounds of carbonate of soda in hot water, and mix in a barrel after cooling. Allow the mixture to stand about one day, and then carefully pour off or siphon off the clear liquid. Add more water, stir thoroughly, and allow to stand another day, when the clear liquid is to be poured off again. Repeat this the third time, when the carbonate of copper, which has settled to the bottom, may be emptied on a cloth and dried in the sun. When dry, six ounces of the carbonate dissolved in about two quarts of ammonia, is sufficient for fifty gallons of water. This mixture does not injure foliage, is quite adhesive, and is efficient. Some experimenters use only three ounces to fifty gallons of water.

In many cases, as for the apple scab and apple worm, for the curculio and pear scab or plum rot, for the potato blight and Colorado beetle, a combination of fungicide and insecticide is wanted. What is the best? Both Paris green and London purple can be used in the Bordeaux mixture with safety, and where this compound is admissible nothing else is needed. Peach trees, even, can be sprayed with this combination without injury. For apples and pears it is all that can be desired. One spraying with the Bordeaux alone before the leaves open, and with Paris green or London purple added as soon as the blossoms fall, and twice thereafter, will give as fine fruit, as free from blemish as our grandfathers ever saw. Wherever this combination can be used without danger of coating the fruit, it is all that can be desired as to effectiveness and freedom from liability to harm the foliage.

We have devised and have given a partial test to a new combination that has some advantages over everything else, but further trial is necessary to determine its real value. The formula is as follows: Paris green, four ounces; copper carbonate, four ounces; ammonia, three quarts; lime water, fifteen gallons; water, thirty-five gallons. The Paris green and copper carbonate may be mixed and dissolved in the ammonia, and the lime water and water added when the mixture is ready for use. Instead of lime water one-half pound of lime may be used to fifty gallons of water. This mixture is especially adapted to use for apple scab and apple worm, pear scab and curculio, potato blight and bugs. It can not be used on peach trees without some modification; but it is believed that by adding more lime and reducing the quantity of Paris green one-half, it may be used on peach and plum trees. This mixture is easy to prepare, works nicely in any machine and coats the foliage but little and is comparatively inexpensive. All the ingredients are dissolved in the water or remain suspended in such shape that they come down slowly; hence, it may properly be called a solution of arsenic and copper. It is quite probable that the proportion of Paris green in the mixture may be reduced and still be as effective as when used in suspension in larger quantities. Any substance can

be more finely distributed when in solution than in suspension; hence a smaller quantity is required. This mixture is thrown upon the plants in a soluble condition, but the ammonia soon escapes, and the result is that it assumes the form of an almost insoluble arsenite of lime, along with several other compounds. It is the presence of lime that prevents harm to the foliage, as in the Bordeaux mixture, and it should be remembered that no soluble arsenite can be applied to foliage in safety, without lime is added. For this reason ammonia and Paris green should not be used in combination without lime; also the use of London purple and white arsenic should be avoided in all mixtures where lime is not present.

Combinations of insecticides and fungicide is a matter that horticulturists will do well to give earnest attention, since a saving is not only thus effected, but it is no doubt true that in many cases the benefit will be much greater than anticipated. A healthy foliage is not only useful to the plant in maturing a crop, but assists in resisting insect attacks and diseases that can be reached by indirect means only. For instance, pear, quince and apple blight are bacterial disease that can hardly be cured by any known means; but keep the foliage free from fungi and in a healthy condition, and it seems reasonable to suppose that the trees will be less liable to an attack of this insidious disease. Hence, I would urge the use of combinations for both insects and fungi wherever practicable.

Secretary Farnsworth spoke of the need of more definite instructions in regard to preparing the Bordeaux mixture.

Prof. Green says the raspberry blight or anthracnose is becoming worse each year. He thinks spraying with the Bordeaux mixture will be found beneficial. He would make the first application before the leaves open and spray three times before blooming. A similar disease is attacking blackberries.

Mr. Harris feared his peach trees had the yellows, but upon hearing the symptoms in the case the Society decided that it was caused mainly by rich, heavy, moist soil, and perhaps partly due to the ravages of a worm mentioned by Mr. Withoff (somewhat akin to the peach borer), which bores small holes in the trunk of the tree.

VISIT TO THE ORCHARDS AND VINEYARDS OF CATAWBA ISLAND.

On Wednesday, August 19th, 1891, 8.30 A. M., the Society met at the hall, and adjourned to visit the surrounding orchards, in carriages, furnished by the citizens, that were in readiness.

It requires but little observation to perceive that the peach is queen of the island, and many a promising vineyard and pear orchard is grubbed out and made a "burnt offering" by her loyal subjects, that her kingdom may be extended. Some enthusiastic planters have discovered that the peach is the tree for the lawn. (Hope friend Pierce will make a note of this.)

The fine residences, barns, and out-buildings were ample evidence of the thrift and prosperity of this distinctively fruit-growing people.

One of the first peach orchards visited was that of Captain George Ellithorpe, who was one of the pioneers in peach culture at this place, and who now has about sixteen thousand trees planted. He believes in thorough culture, and practices it. He also uses a large amount of muck and all the stable manure he can save. His trees are, many of them, sixteen feet apart, but he would now plant them twenty feet apart each way. Can not afford to grow crops or weeds in his peach orchard, and considers clover too much of

a check on the growth of tree and fruit. He cultivates deeply on his deep soil, believing that the roots are better off several inches below the surface, where the sub-soil is suitable, as is the case in his orchard. He does not cultivate after August first, for fear of late growth and unripe wood at the beginning of winter. Waterloo, Early Silver, Mountain Rose, Early Crawford, Late Crawford, Smock, Salway, and Bilyeu's Late are the leading varieties. Some Foster, Richmond, Barnard, etc., are also grown.

The plum orchard of Mr. Caleb Cooper, on the peninsula adjoining Catawba, was the next point of interest. It contains nine hundred trees, and is under a high state of cultivation. Mr. Cooper and his manager, Mr. Lightner, consider plums more profitable than weeds, and act accordingly. The crop of 1890, as I was informed, sold for \$2,700 leaving a net profit of \$1,700. The present crop, although not quite so large, was a good one. The varieties are mainly Geuii, Coe's Golden Drop, Reagle's Union Purple, Lombard, Yellow Egg, and Pond's Seedling. The soil is a fertile, level clay, well drained. Mr. Cooper is somewhat conservative in regard to spraying; as Mr. Lightner says, they "have a great deal at stake," and *know* jarring to be effectual. Their faith in spraying is increasing, however. The large number of instances where improper spraying has injured the foliage certainly tends to inspire greater caution in the use of arsenites.

We noticed one small orchard of Dwarf Duchess badly defoliated by the pear slug. This enemy seems to have increased largely in the past few seasons, and will do great damage in our pear and cherry orchards if not persistently combatted. Mr. Ellithorpe states that spraying with ice water will destroy them.

The horticulturists of this vicinity are not only successful in growing fruit, but have apparently hit upon the best plan of marketing it. There are two companies operating upon substantially the same system. A number of growers organize, elect a manager to attend to the shipment of their fruit. The fruit is picked carefully from the trees, brought to the packing house, and after the green, decayed, or imperfect fruit is removed by hand the remainder is run through a grader making three grades (A, B, and C), besides culls. Each man's letter or number is stamped upon his baskets, and when shipped the printed guarantee of the company which packed it, is placed upon the basket.

The companies aim to deal directly with the retailer, and sell mostly on orders. They also have salesmen of their own selection in Detroit, Pittsburg, and other cities, to handle any surplus fruit. Their fruit is honestly packed and guaranteed, and they propose, as far as possible, to do away with snide packages and snide packing.

AFTERNOON MEETING.

At 2 P. M. the Society met at the hall.

Mr. N. H. Albaugh was unable to be present, but sent his paper which was read by the Secretary, as follows:

HORTICULTURAL LEGISLATION.

BY N. H. ALBAUGH.

The old adage that "The Lord helps those who help themselves," is as true to-day as when first written, and is especially true of horticulture. There are hundreds of opportunities for accomplishing important results in horticulture, in examining special freaks of varieties, in fertilization and cross-fertilization, in noting the habits of insect enemies, or destroying them that will not admit of procrastination, but must be attended to "on the fly" if advantageous results are obtained. Hence, many of the most important discoveries in horticultural science are the results of individual effort of self-sacrificing men, whose whole lives have been and are imbued with love of horticultural pursuits, and to their everlasting credit be it said, they have almost universally given to

the world at large their important discoveries "without money and without price." Thus we have had in Ohio such horticultural philanthropists as Warder, Weltz, Elliott and Kirtland, with a number of lesser luminaries, some of whom are still on "the stage of action."

However much can be, and is accomplished by the assistance of public effort and public funds. There are splendid opportunities in many parts of our State for the forming and building up of local horticultural societies that could accomplish wonderful things for their particular locality if the proper encouragement and start was made by sending out missionaries to arouse interest therein.

Our farmers' institutes are accomplishing grand results among the tillers of the soil every year, and doubtless adding to the value of crops grown from year to year many thousands of dollars. In these, however, as a rule, horticulturists do not cut much of a figure. Well skilled horticulturists who are ready with the pen or are interesting talkers, are not plenty, and often not attainable. A special effort should be made to obtain such, who could arouse some interest at farmers' institutes and then remain a day or two and assist in organizing a live horticultural society in each favorable locality where none now exist. Farmers find time to be led into other farmers' organizations by designing leaders, some of them to their advantage, but others to their great detriment. They could be induced, with proper effort, to form farmers' clubs and horticultural societies where farming and fruit growing would be the chief topics and not sockles and bewhiskered politics.

Many newer States devote yearly fair amounts for the furtherance of horticulture. Michigan, with nearly half her domain yet covered with the original forest, has appropriated four thousand dollars yearly, in the past, to horticulture, and even the blizzard-beswept States of the Northwest, where only small fruits can be successfully grown make liberal appropriations annually to the cause.

In Ohio the very largest interests of its citizens are in tilling the soil, and over a half of all taxes are paid by the farmers alone, and yet it is almost like "pulling teeth" to get a liberal appropriation from the solons of our Legislatures for the furtherance of agriculture and horticulture. In some other things they seem always ready and willing to vote money *ad libitum*. For instance: All appropriations for agriculture and horticulture, annually of last several years, has been about sixty to seventy thousand dollars, while each year the Legislature has very glibly voted from one hundred thousand to one hundred and twenty thousand dollars for the maintenance of that showy but nearly useless appendage, the Ohio militia. The appropriations yearly for horticulture has been barely a thousand dollars, and this is so hedged about that in drawing a small order it is nearly as much trouble as it is worth to get it. With fair annual appropriations to agriculture and horticulture, what mighty advances might be made in discovering new varieties of grain or fruit, new methods of culture, and more efficient modes of destroying insects. In these different branches, the agricultural and horticultural products of the State might be greatly extended and multiplied, and hundreds of thousands of dollars added annually to her income.

In a few things of vital interest to horticulturists, remedies, if applied at all, must be applied by properly enacted laws. This is especially true of that dread disease known as "BLACK KNOT," which has already devastated the plum orchards of Southern Ohio, and unless effectually checked by the united efforts of all in every locality, will soon render plum growing in Ohio a thing of the past. Live, energetic work by horticulturists will eradicate the disease if taken promptly on its first appearance, but all this labor will go for naught if a careless or shiftless neighbor pays no attention to the disease on his premises. A law authorizing supervisors of roads to enter upon any premises (after reasonable notice to owner or occupier of same to destroy trees so affected) and eradicate the diseased trees, and charge expenses of same upon taxes of said lands, would be effectual. Such a bill was drawn by the executive committee of this Society last winter, and introduced in the house of representatives at Columbus, with the seeming certainty of its passage, and yet the Agricultural Committee of the house saw so little good in it,

- or knew so little of its subject matter, that they reported it back "without recommendation," and the bill was lost. It will be introduced again the coming legislature, and it is to be hoped, by personal explanation by our ex-committee, share a better fate.

Meanwhile, it is our duty, as well it should be our highest aims as horticulturists, to go ahead in all lines of progress, letting our light shine into "the dark places," be ever on the alert in our profession, and hope for that reward that comes from good intentions and good works, superinduced by good and unselfish motives.

Mr. Ohmer urged the importance of a Horticultural Society at this fruit center.

The Secretary spoke of the social, financial and general benefits of a County Society.

President Campbell then read the following paper:

THE OUTLOOK FOR THE GRAPE GROWER.

Our Secretary has me on the program for some remarks upon the outlook for the grape grower. If I were to judge from the prospect in Central Ohio, the present season, I would not report very favorably, for frosts in May destroyed our grape crop, and excepting a few vines upon the walls of buildings, or other sheltered situations, there are no grapes of any consequence—only a few scattering clusters from secondary buds.

But from a more extended view, throughout the entire country, and the present condition of grape growing, embracing the whole subject, I should say the outlook for the grape grower was good—perhaps never better. And I say this in full knowledge of the many and serious difficulties we have had to contend with: rot, mildews and phylloxera and other insect pests, in some localities also, untimely frosts as well as hail and drouth.

But most grape growers are now alive to the fact that through the agency of the late discovery of preventive remedies, the intelligent and careful grower can control most of the difficulties heretofore so destructive and annoying. The increase of new varieties, though not all that we have hoped for, or all that their originators promised, have given the grape growers a large variety to choose from, and by judicious selections of varieties suited to various localities, if accompanied by the use of the proper remedies, the area of successful grape growing can be greatly enlarged, and the profitable growing of grapes reduced to as near a certainty as that of any other of our popular fruits.

From some limited experiments of my own, and much more from observation and reports from the more extensive operations of others, I am compelled to believe that the possibilities of grape-growing, with the timely application of preventive remedies, are greater than they have ever been.

The most popular and generally successful of these remedies, all having for their principal agent the copper sulphates, is the so-called Bordeaux mixture. The most approved formula for this mixture is six pounds of sulphate of copper dissolved in hot water. In another vessel slack four pounds of quick lime to about the thickness of milk, and when cool add it slowly to the copper solution; strain all through a fine sieve, and then, stirring continually, add water to make twenty-two gallons.

The next best remedy has been the eau celeste, or blue water, made by using two pounds of the sulphate of copper in six or eight gallons of hot water, and when thoroughly dissolved adding three pints of strong ammonia, and diluting to fifty gallons.

Another form, called *modified eau celeste*, is reported to have been more effective in some cases than the other mixture, or than the Bordeaux mixture. For fifty gallons, two pounds of the sulphate of copper is used, dissolved in hot water as before; and in another vessel two and one-half pounds of common sal soda. Mix the two, when cold, and add one quart of strong ammonia, and then add water to make fifty gallons. I will

add that all these mixtures have been still further diluted, and found to work admirably as preventives, if applied before the appearance of fungus diseases, the foliage and fruit remaining healthy where untreated vines were badly injured both in fruit and foliage. I will not detain you by further remarks upon these remedies, as they have been so extensively published; but I do feel that by their prompt and intelligent use the grape-grower is master of the situation so far as injury from fungus diseases is concerned.

I have for many years hoped and believed that the efforts of those who are endeavoring to increase the number of valuable and good grapes by growing seedlings, would give us varieties of fine quality, and better adapted to general cultivation than the older kinds, many of which are deficient in quality. To some extent this has been realized; but the fine grapes have, as a rule, been found more subject to attacks of disease, both of the fruit and foliage, than those of coarser mould and lower character.

As in other fruits, the more delicate and finer grapes are neglected by most market growers, and such sorts as Champion, Joes, Hartford and Perkins are largely planted in some localities and claimed to be more profitable than even Delawares or other finer kinds. I think, however, the popular taste is beginning to require something better, and that it will not much longer tolerate anything below Concords, Moore's Early, Lady, Niagara, the best of Rodgers' Hybrids, Empire State, Pocklington, Worden, Woodruff Red and Brighton. All these are becoming well known, and I think will hold their own until the public taste is educated to something better, which will surely come through the agencies I have mentioned—the production of new and finer varieties and their successful growth by the use of remedies against the fungus diseases which have been so destructive in the past.

The most popular grape continues to be the Concord, and I am not certain that the propagation and sale of this variety does not equal that of all others at the present time. It has most of the elements of the perfect grape we have been so long looking for; but its value would be vastly increased if it had a more tenacious skin which would bear handling and shipping with less injury. If we could add a little better quality and longer keeping, it would be very near that perfect grape to which I have alluded.

Give the Delaware a larger bunch and better foliage, and we could ask for little more.

There are still many persons striving after that "perfect grape," and one of the most persistent and one who promises to be most successful, is T. V. Munson of Texas, who is experimenting with the hardiest and best native varieties. I have a few varieties received a few days ago, which seem to me in the line of valuable improvement, and which I have brought here for your inspection.

It would seem that to be popular and profitable for extensive market growing, large size and fine appearance are really of more consequence than the finest quality where these are wanting. Early ripening is, in many localities, also of the first importance. For these reasons, the Champion, which I regard as one of the poorest in quality is largely planted in southern Ohio and many other places, and claimed to be more profitable than any other grape, even in Cincinnati and other large cities.

I have perhaps said enough to open the subject for discussion, which is all I intended, and I know there are others present who are better fitted, by large and practical experience in grape growing, to present intelligently the question of the "out-look for the grape grower," and I shall be very glad to hear their views and opinions.

My faith in the eventual success of American grape growing is not lessened, and I think I have reason to believe the time will come when both the grapes and the wine of America will be second to none on the face of the earth!

Mr. Trowbridge thinks Hartford Prolific is grown more than Champion around Cincinnati. He spoke of the labors of John Burr, of Leavenworth, formerly of Ohio, in the improvement of the grape.

Mr. Pierce said this was a fit illustration of the great amount of work that may be accomplished by a devoted horticulturist during a life time.

The Executive Committee was requested to fix the usual State Fair meeting on Thursday evening, September 17, 1891.

Mr. Beebe thought the Lombard the most productive and profitable plum.

Mr. Pierce spoke highly of the Murdy plum exhibited by Mr. S. G. Withoff, of Dayton.

Mr. Trowbridge said it was of good flavor.

Mr. Beebe reported some black knot in his vicinity but said it was being held in check by vigilant watchfulness.

Mr. Ohmer spoke highly of the system of packing and grading practiced by the fruit companies of the island.

One gentleman complained that his plums dropped their leaves prematurely.

The Secretary thought the plum required high culture and liberal feeding.

REPORT OF COMMITTEE ON FRUITS.

[Midsummer Meeting, Catawba Island.]

Your committee finds the show of fruit small and nearly all from a distance, the residents of Catawba Island, with their wonderful array of fruit on the trees, making no attempt to make an exhibition or make the meeting different in this respect from what it might have been if held in the center of the Sahara desert.

The Albaugh Nursery Co. shows the Murdy, a mammoth plum of the Pond's Seedling type. This originated in Jackson, Vinton county, and the specimens exhibited are considerably larger than the large Pond plums seen in the markets, from California.

S. G. Withoff shows a large, dark, red apple, in season, of rather coarse texture, and something of the flavor of Red Astrachan, but less acid. Is worthless, considering we have so many good sorts now.

E. Dodd, of Waterville, sent two plums for name, but no one could name them.

Mr. Dunnipace showed some Russian apples, called "Enormous," with the statement that they were about one-third the usual size. As the specimens were scarcely as large as an ordinary Fameuse, they must have been grown under adverse circumstances. A coarse, large apple of the Gloriamundi type, shown by the same party, was not recognized.

R. A. Hunt, of Euclid, showed five specimens of Bradshaw and Washington Gage plums; also a seedling of the Green Gage type that was remarkably high flavored. It was of medium size, and said to be very productive and remarkable for its distinct ornamental foliage, the leaves being large, glossy, and very healthy. [The chairman of this committee saw this plum on Mr. Hunt's grounds two years ago, and can confirm the assertion in reference to productiveness and foliage.] Mr. Hunt also showed a large variety of horse plums of good flavor. In addition he exhibited for name a beautiful round plum, about three quarters the size of the Washington, and of a purplish green color. It was of excellent flavor and just in season. In grapes he showed Worden, Ives, Early Victor, and Moore's Early, not ripe, for comparison with Early Ohio, a seedling.

apparently ten days earlier than the others, as it was colored up nearly black and in quite an estabale condition. It is to be introduced, this fall, by Curtice & Co., of Portland, N. Y.

Mr. Maxwell, of Euclid, showed some common sour cherries, nearly a month out of season, owing to some freak of the tree producing them.

L. B. PIERCE,
JAMES EDGERTON.

STATE FAIR MEETING.

COLUMBUS, *September 17, 1891.*

The Society held its customary State Fair Meeting in the hall of the House of Representatives.

President Campbell called the meeting to order and briefly stated the business before the Society.

Mr. F. Ford, on behalf of the Portage County Horticultural Society, invited the State Society to hold its annual meeting at Ravenna.

Mr. Bitzer, of New Berlin, extended an invitation to come to Stark county, and Mr. Henry Young presented the claims of Ada, Hardin county.

Jno. Pierce presented the claims of Troy, Miami county, and Prof. Lazenby reminded us that a meeting at Columbus would always receive a hearty welcome, and was always a success. On ballot, Ravenna was chosen as the place of meeting.

The matter of our representation at the Columbian Exposition was next discussed.

President Campbell thought Ohio Horticulture should be represented there, and it should be done through the Ohio State Horticultural Society.

Prof. Lazenby thought we were entitled to a portion of the general fund appropriated by the legislature.

Mr. Ohmer said if the legislature could not afford to give us means to make a creditable exhibit worthy of our great State, we had better not attempt any exhibit.

The matter was left in the hands of the Executive Committee, with

instructions to ascertain how much of the general fund could be secured for our use, and report at the Annual Meeting.

President Campbell and Secretary Farnsworth were appointed delegates to the meeting of the American Pomological Society at Washington, September 22d, 23d and 24th.

President appointed O. W. Aldrich, J. J. Harrison and Albert Hale a committee to examine the new fruits on exhibition.

REPORT OF THE COMMITTEE ON NEW FRUITS.

[STATE FAIR MEETING.]

Your Committee on New Fruits would respectfully report that a number of varieties were presented to them, of which they consider the following worthy of mention :

APPLES.

Mr. J. R. Hurst, of Ross county, presented a seedling grown by James Chew. It was a large, green apple, resembling in shape the Rhode Island Greening. Season, middle of September. The quality is not good enough for an apple of its season, and its color is against it as a market variety.

Mr. Henry Rollin, of Meigs county, showed a seedling grown by Newton Burgess, of Dexter. Color, red; size, large; rather coarse in texture; said to be a good cooking variety and a long keeper.

Mr. Pierce, of Miami county, presented an apple grown upon the sole surviving tree of one of the earliest planted orchards in that county, the tree being now about two feet in diameter and still vigorous and very productive. It is supposed to be upward of 80 years old. The specimens were large, of very bright crimson color, with numerous small white spots; very smooth and attractive in appearance. It was stated that the first specimens began to ripen in July, at which time there would be many apples not larger than hickory nuts on the tree, which would ripen in succession until picking time, in the fall, when there would be quite a proportion which would keep till January. Some of the specimens shown were fully ripe, while others were quite green. The quality was so poor that the majority of the committee would not recommend it for propagation, but its size and beauty were such that it would doubtless meet a ready sale, and we were informed that it readily sold at the highest prices during its season.

Mr. O. V. Creamer, of Parrott, Fayette county, showed a seedling called "Funk" in that locality. It was large, conical, green, striped and splashed with red, calyx partially open in slight depression, stem half an inch long, slender, in narrow basin; quality very good, flavor mild, sub-acid, similar to the Northern Spy, which it sufficiently resembles to indicate it may be a seedling from it. It is said to be productive and an annual bearer.

PEARS.

Mr. J. R. Hurst showed a seedling found growing in a highway. In appearance it is more like an apple than a pear, being rather flatter than a Rambo. It bears its fruit in clusters. The specimens were picked too green to ripen well, but when ripened the taste was such as might be expected to be found in a hybrid between a pear and a Tallman sweet apple.

Mr. O. V. Creamer showed a pear grown by John James, of Washington C. H., on a tree grown by him from seed of a fine pear purchased at Castle Garden, N. Y., and named by him, "Castle Garden." The specimens were large, stem an inch long, very

thick and set with slight depression on one side, calyx open in slight depression, quality very good. This pear so strongly resembles the Onondaga that there is little doubt that it is a seedling of that variety, and unless there is something superior in the healthfulness or hardiness of the tree, we see no reason to encourage its propagation.

PEACHES.

Mr. J. R. Hurst showed a seedling grown by Mr. James Chew, which took the first premium as a new seedling at the State Fair. Skin and flesh white, size medium, pit large, quality excellent; not showy. Its quality is so good that we recommend it for trial as to productiveness and hardiness.

Mr. Duer presented specimens of Miller's Cling, heretofore named by the Society. The specimens were very highly colored and attractive in appearance. They received the second premium at the fair.

Mr. R. J. Tussing, of Canal Winchester, showed a seedling grown by Elijah Kramer, which, in appearance, resembled Jacque's Rare; ripe, but was distinct from any other variety at the junction of the stem. It was reported that the tree was overloaded this year, and that last year the fruit was nearly twice as large as the specimens shown. As the peach crop was generally a failure in Franklin county, we would recommend a further trial as to hardiness.

Mr. D. F. Corwin, of Warren county, showed a very large white peach, some specimens being about twelve inches in circumference, but was only of ordinary quality, and, in our opinion, its size was all it had to recommend it.

Respectfully submitted.

O. W. ALDRICH,
J. J. HARRISON,
ALBERT HALE,
Committee.

TWENTY-FIFTH ANNUAL MEETING
OF THE
OHIO STATE HORTICULTURAL SOCIETY,

AT

RAVENNA, PORTAGE CO., O., DECEMBER 9, 10 AND 11, 1891.

RAVENNA, OHIO, *December 9, 1891.*

By invitation of the Portage County Horticultural Society, the Ohio State Horticultural Society held its twenty-fifth annual meeting in the New Universalist Church, Ravenna, Ohio.

The convention was called to order at 1:30 p. m. by Vice-President O. W. Aldrich of Columbus, Ohio, who said: "Inasmuch as President Campbell has not yet arrived, we will proceed with such business as may be necessary in the mean time. The committee on Order of Business, composed of Mr. Ohmer, Mr. Pierce and Mr. Trowbridge, may make such report as they have. Perhaps at this time the committee on Membership may as well be appointed in order that they may proceed with the work in that department pending the arrival of the President. If there be no objection, I will appoint as members of that committee Mr. Wilson, of this place, who will act as Chairman, Mr. Pierce, of Miami county, and Mr. Bitzer, of Stark county.

The next thing in order will be the report of the *ad interim* committees, as in the printed program.

Mr. Pierce, of Summit county, then read his *ad interim* report as follows:

A YEAR'S RETROSPECT.

AD INTERIM REPORT OF L. B. PIERCE.

The mild winter of 1890-91 was followed by a warm early spring, and all the fruits from the strawberry to the quince promised an abundant crop, so much so that the fruit-growers asked themselves where they would find a market for it all. Toward the close of April the storms were followed by low temperature and about once a week a frost occurred, culminating on May 7th in a freeze that killed every thing on low grounds and much on the high grounds. The sight about sunrise of that Sunday

morning was one that does not often occur and one that I do not wish ever to see again. On my highest land, a small peach orchard escaped, but a few feet lower almost every thing was killed in the way of tree fruit—grapes, all strawberries in blossom, and a portion of the raspberries and blackberries. For some reason Baldwin, Stark, Ben Davis and Fallwater apples escaped and some varieties of pears bore on their upper branches.

The earliest strawberries suffered the most, and an experimental plantation of over twenty varieties on a warm, southern slope was almost entirely frosted, so much so that I could not draw any definite conclusions from it. Snyder blackberries were mostly killed, and Kittatinny on early ground to considerable extent. Taylor, Lawton and Erie were uninjured and bore a full crop. The result in Summit and adjoining counties was less than ten per cent. of a crop of tree fruits, a total loss of grapes and quinces, and not more than ten per cent. of blackberries and currants. Strawberries, enough escaped for a reasonable supply and there was no glut and no waste. Success with this fruit depended largely on varieties. Those who had Sharpless, Jessie and early staminate varieties, put their packages away in the fruit house and spent the month of June in planting late cabbages, cornfodder and celery, and thanking the Lord that they had pious parents who taught them not to swear. Those who had Crescent, Chas. Downing, Bubach and Kentucky went merrily to the market every day, realized nearly or quite as much as if there had been no frosts. Of my own crop, seventy-five bushels out of eighty-six were Chas. Downing and Crescent, that grew on three-fourths of an acre of ground. On the morning of the frost it did not seem as though I could have more than six bushels, and it is yet a mystery to me where the buds and blossoms came from which bore the crop. The eighty-six bushels brought \$269 gross, or a little less than ten cents per quart. Blackcap raspberries were nearly a failure, owing to the anthracnose, which seems in a fair way to ruin the business, unless freezing proves a preventive.

The partial scarcity of blackcaps in the market made a call for red ones, and these sold quickly at good prices, an agreeable change from three or four years ago. There will be a large breadth of red raspberries planted next spring. As to varieties, I know of nothing better for sandy loam soils than Turner and Cuthbert.

My own crop of blackberries was an exception to most in the county. I harvested 109 bushels, a large part growing on an acre and a half of ground, mostly Erie. The fruit—16 bushels—sold for over \$4 per bushel. All the rest except 12 quarts sold quickly at \$3.20. Scarcity of apples and the killing of the huckleberries helped the sale of berries. Peaches and plums were confined to trees growing on the highest hills, and were mostly sold at home to retail customers, few finding their way to the stores of dealers. One grower in Portage county marketed about 100 bushels of plums, 60 bushels bringing \$4 per bushel; the balance \$3. Peaches of good quality sold at \$2 @ \$2.50 per bushel, but for Crawfords, nicely selected, I got \$1 per peck. As a rule, the plums shipped in were riper and of better quality than ever before. The larger portion came from New York, the balance from around Sandusky. Peaches from abroad, especially those from east of the Alleghenies, were of poor quality and a disgrace to the growers, having been picked from one to two weeks sooner than they should have been. The best in quality were from Catawba Island, but to a taste built on home-grown fruit, they were far from perfect. People who depend upon fruit shipped from a distance, know little of ripe fruit flavors, and this, I think, accounts for the fact that so little is bought for dessert purposes.

Quinces and grapes were not found in the markets except as shipped in. Apples readily brought 75 or 80 cents a bushel until about November 14th, when shipments from Pennsylvania cut the price about 15 per cent. There was a great demand for cider, which commanded \$4 to \$5 per barrel. Altogether the fruit supply about equaled the demand, and a very large amount has been canned, few families stopping short of 100 quarts, while many have put up 200 or over. The low price of sugar helped materially in marketing fruit.

The frost so demoralized the apple crop that very little spraying was done. Some orchards in the north part of the county were sprayed for codling-moth and the results were quite satisfactory. A grower at Kent, Portage county, made smudges in his orchard of plums and peaches on the night of the frost, and thinks he saved them by that means. The orchard, however, has excellent atmospheric drainage, and it is possible that it might have escaped as others thus located did.

The year has been favorable for gardening, and ready sale has been found for every thing in this line, there being much less garden truck grown in Summit county than is consumed. Such stuff as does not have to be mature reaches the market in an eatable condition, but early watermelons and muskmelons, throughout the season, were like the peaches and tomatoes—too green to eat. A reprehensible practice I notice is obtaining followers in the home ripening of tomatoes. One large grower picks all his tomatoes as soon as they show any color, and places them in a greenhouse. He gains in this way several days' time at the expense of flavor.

The practice of marketing fruit and vegetables before they are ripe is resulting in reduced consumption and will surely injure the business. An Akron lady told me that she would be glad to have peaches as desert twice a day could she get thoroughly ripened, full-flavored fruit such as I furnished her, but the flavorless ones found in the market were not good, so they did without. A New York paper is responsible for the statement that the muskmelon market there was totally ruined by the unripe melons sold early in the season.

In those branches of horticulture which are purely ornamental—and to which, I am sorry to say, this year's program makes no allusion, and gives no place to floriculture and landscape gardening—constant progress is noticed in Summit and Portage counties. The cramped 7x9 fenced-in door-yards of former years are giving place to large, open lawns, tastefully planted in groups and brightened with flower-beds. The use of evergreens for shelter and windbreaks is annually increasing, converting bleak, wind-swept grounds into quiet, comfortable nooks where the low winter sun peers in and smiles kindly on the increased beauty as well as comfort.

Finally, fellow horticulturists, although the year 1891 brought frost and partial disaster, we have much to congratulate ourselves and be thankful for. In a church but a few miles from here there used to be a devout Scotchman, who always began his prayers in this way: "We thank the Lord it is as weel wi' us as it is." And such might be our sentiments in reviewing the past summer. The first of June not only saw all the fruit cans empty, but the stock of dried fruits and vinegar almost gone. The granaries and feed bins were many of them empty, with no supply elsewhere. Thousands were discontented and disposed to adopt the wildest theories for bettering the present, and altogether the outlook was decidedly gloomy. But nature smiled, and we have had a year of plenty, and instead of being in condition of starving Russia we have enough and to spare. Let us begin another year resolved to do our level best availing ourselves of every opportunity to increase the yield of our brains as well as our acres.

Secretary Farnsworth: Mr. Pierce has mentioned a subject that has been upon my mind more or less, and that is in regard to the absence of the ornamental part of our program this year. In former years we have made an effort to have a display of flowers, plants and bouquets, but we have not succeeded in bringing it out. There was one paper on the subject of floriculture expected from Mr. Harrison, but I am sorry to say that we are not certain that Mr. Harrison will be here. I was at his place on Monday and he was enjoying very poor health and it is not at all certain that he will be here.

The Vice-President then inquired whether any other members of the *ad interim* committee were present, and there being no response, said: "The next thing in order will be a report from the officers of the local horticultural societies in the State."

Mr. Ohmer: In answer to the Vice-President's call for reports from county horticultural societies, I will read a report handed me by the secretary of our local society which was read by him on last Saturday at our local meeting:

SECRETARY'S REPORT.

For a detailed report of the proceedings of the Montgomery County Horticultural Society for the current year, the printed pamphlet is referred to, which, in a few days, will be ready for distribution among the membership.

For the present it is sufficient to say that the meetings have all been held as designated at the beginning of the year; that the average attendance has been satisfactory; and that they continue to be, as they have been hitherto, sources of much interest and instruction to those who attend them.

The essayists have discharged their duties with commendable promptness and with entire satisfaction.

The reports of the various committees have been full and satisfactory; indeed, some of them have been quite elaborate and filled with useful information.

Quite unlike last year the year just closing has been a propitious one for the orchardist. Apples have been plentiful. Indeed, so abundant was the crop of summer and early fall apples that the prices realized were scarcely up to the expectations of the grower. The demand for winter apples being greater, they are fetching a better price.

Pears were so abundant that prices ruled rather low; peaches were plentiful wherever there were trees; and this was generally so of other orchard fruits.

The grower of small fruits, also, has been blessed with a year of great abundance and prices have been satisfactory.

Viewed from the stand-point of both producer and consumer, the closing year has been one eminently satisfactory.

Respectfully submitted.

WILLIAM RAMSEY, *Secretary.*

Accepted and ordered placed on file.

Mr. Ohmer: I would state before I close that last Saturday's meeting of the Montgomery Horticultural Society was the twenty-fifth anniversary of its organization—just a quarter of a century old—and they are apparently as active now as they ever have been. The attendance is perhaps not quite as large, but large enough. As a rule these meetings are attended by practical fruit, vegetable and flower growers, amateur and professional. I will say further that our Society does a great deal of good in our county.

Secretary Farnsworth: I have a letter from Mr. F. R. Palmer, of Mansfield, Ohio, and if the Society desires to hear it I will read it.

Vice-President Aldrich: There being no objection, the letter will be read:

F. B. PALMER.

Eighteen hundred and ninety-one was an unfortunate year for strawberries here, the crop being cut short fully 50 per cent. by frost on May 17th. Some varieties were nearly all killed. The varieties that withstood the frost best were Haverland, Mrs. Cleveland, Crescent and Enhance. The thermometer went down to 27, and even lower in the valleys, killing grapes and all tree fruits.

We are on high ground and had a fair crop of apples, peaches and plums, while two miles from us every thing was killed. We sprayed our orchard, and had nice sound fruit, fully 80 per cent. free from codling moth. Sprayed only twice with London purple, one pound to 200 gallons of water. Our neighbors who did not spray could not find apples enough free from worms to make an exhibit at our county fair. The south (or hilly) part of the county had about 50 per cent. of an average apple crop. The north half of the county almost an entire failure.

John Pierce, of Troy, Ohio, reported as follows for his county: Our report is very much the same as that of Mr. Ohmer. We have an abundance of all kinds of fruit, with the exception of, perhaps, blackberries. Otherwise we have succeeded very well in our community, horticulturally. The attendance at our county society meetings during the past year has been good, and they are well kept up, and give promise of continuing so, for at our last meeting we had a magnificent attendance.

Ad interim reports again being called for by the presiding officer, Mr. Bitzer, of Stark county, read the following:

AD INTERIM REPORT FOR STARK COUNTY.

The report from Stark county is not so encouraging as might be desired. The products of horticulture for various reasons, as late frosts in the spring, extreme wet weather, etc., were not in quantity up to the standard of former years in general, but were good in quality and prices ruled high.

Strawberries—Fell far short of a full crop. The tender varieties were injured badly by the frosts of May 5th and 17th, some varieties suffering more severely than others, in some cases depending on location.

Blackberries—The yield was immense wherever canes had been properly cared for.

Raspberries—Yielded well and commanded good prices. Think the supply could not meet the demands of home market, which has grown to be very great for this berry. The acreage increases yearly.

Currants and Gooseberries—Were partially injured in the blossom and did not yield well.

Cherries—Were plenty. The black knot is seldom seen, as all trees so affected have been destroyed, believing this to be the surest, best and quickest remedy.

Grapes—Almost a failure. Cause, frosts killing or injuring the tender shoots in early spring. Vines on the sides of buildings or on high grounds did not suffer so severely.

Quinces—Yielded but little fruit. Have noticed many bushes are affected with a blight that destroys the tender twigs.

Pears—Brought to us a plentiful crop and good in quality.

Peaches—The natural stock gave an abundant crop, but the budded stock was very limited in its yield.

Apples—Think in the county might average half a crop—the crop being quite local—one orchard bearing quite well and a neighboring orchard yielding but little. In many cases it seemed difficult to fix a rule that would solve this problem. In beauty and quality apples stood well, and commanded good prices in the markets.

Spraying of trees and vines has received considerable attention, different preparations being used, and reports generally are favorable, but here spraying has not yet been sufficiently tested. Some who have not sprayed their trees report less ravages from insects than in former years.

Mr. Wilson: I have not been quite as fortunate as our friend, Mr. Harrison, to whom our Secretary referred as enjoying his ill health. I have also been sick, but I can not say that I enjoyed it. I will plead my illness as an excuse for not reducing my report to writing, but I promise you that I will do so.

The Portage County Society has moved along at about an average during the past year. Since its organization, following the State convention held here in 1877—I believe it was organized in 1879—it has had an average paid membership of from 70 to 75, and all these years it has ranged from 68 up to 79, and including the wives and children and members of families, we have had an average membership of about 250. The present year's paid membership is 70, and it will reach at the end of our financial year about the usual number, eighty, making a total membership, counting all, of 250. Our meetings have been held almost uniformly at regular times, but occasionally something necessitated a change of a few days. The essayists have been usually prompt, and they generally presented excellent papers. Among those who furnished valuable and interesting papers might be mentioned Professor Pike and Professor Claypole, and I need not say that we are not ashamed of our local talent. We have tried to rival the Montgomery Society, and we now think that the child is larger than the parent; at least we will not take a back seat. We have added social features to our exercises which add much to the interest. I do not desire to detract anything from the Montgomery Society in the presence of their representatives present, for we all know they have able papers at Dayton. The exhibits at our meetings this year have necessarily been limited. Our strawberries were very largely injured by the frosts of May 17th. While the strawberry exhibit was fine and the specimens good, the number was limited. Apples have not been in this county what they have been in other places, judging from the exhibit here, although we have fine specimens. Grapes we have none, neither to boast of nor to eat. I have the pleasure of reporting that our society continues with an average attendance that is very encouraging. Our regular year ends with January, but our annual meeting is held in February, hence our accounts are balanced at that time, and we date from February to February, and in making out my report of the state of the Society for

publication, I will make it out in such form that you will all understand the figures showing our prosperity and standing, financially and numerically.

I am glad you have been privileged to come here from different parts of the State, and I trust that a good many more of the home society will be present this evening, and during the continuance of the meeting, to bid you a hearty welcome, and if they are not here we shall feel ashamed of our Portage County Society. They should come to extend you such a welcome as you justly deserve when you have come from your distant homes to sit down at their door.

Mr. Whitney: I do not represent any society, and can not report officially for the Trumbull County Society. I might report that the society, to use a slang phrase, is not "in it." They have laid down and died, but I do not think it will be out of place to give you the reason for the failure of that society. I would judge, as near as I can from being there about six years, that the principal cause of failure is the fact that there are but few fruit growers, horticulturists and lovers of fruit in the county. Since I have lived there the membership has only numbered from twelve to sixteen paid members, and the attendance run from nothing up to fifty at a meeting, the attendance depending largely on the state of the weather, condition of the roads and the locality in which the meeting was held. As there are but few horticulturists there, the attendance is largely made up of agriculturists, and only when the meeting was near them would they attend. A few of the people of the town or village where the meeting was held helped to swell the attendance to the number I have mentioned. I might say that not more than three real active horticulturists belonged to the society who tried to attend its meetings regularly. When the meetings were held in the southeastern part of the county, near Youngstown, where there are a few more engaged in growing small fruits, they were so far from Warren that people of that vicinity would not attend, and consequently we concluded to let it alone.

I might report, if the Society wishes, in regard to the fruit in that section. The frosts, as we all know, in the spring, destroyed a large part of the tree fruit all through that section, and what fruit we had was in spots. While there was considerable fruit in the county, many parts of the county had none. For several miles around Warren there was no fruit scarcely. Six miles from Warren, on Stony Hill, there are two or three farms owned by Messrs. Wilson and Woodward. On these farms the peach yield was good. They had perhaps twenty-five hundred bushels, and our markets were supplied all fall with the earliest and the latest varieties of peaches, well ripened. There were few apples in the northeast corner of the county. Thirty miles north, in Geauga county, there

were plenty of apples. At our old place, where I was raised, they had a large crop, and they hauled them into the town of Warren in wagon loads. They got to learn that there were no apples about Warren, and then they brought plenty apples there, at their prices, selling them generally at fifty cents a bushel, wholesale. There were no pears about Warren. They had plenty up there where my brother lived and of course I told him to come down, and then others learned that he was bringing them there and selling them, and they soon found that ours was a good market for their surplus pears. Small fruits are grown but little in Trumbull county. Nine-tenths of the small fruit sold in the town of Warren—and they use an immense quantity—is shipped in over the railroads, and large quantities brought in from adjoining counties in wagons.

E. M. Woodward: Lake county, even though it be the smallest county in the State, should not be left out of this report. Our society was organized about the same time as that of Portage county, in 1877 or 1878, and I was the president of that society for years. During our last December meeting, we were so fortunate as to secure Mr. Harrison, of Painesville, to preside over us, and I expect he will be here. During the past year we have departed from our regular order. Before this, our meetings had been held in one place and there were a great many practical horticulturists who did not attend the meetings. So, during the past year, we have been meeting in different townships throughout the county and some times at the residence of different members. In that way we have created a much greater interest than had heretofore been manifested. Another plan that we have adopted to increase the interest is to make a specialty of exhibits, both of members of the society and those outside. Our June meeting has always been a strawberry meeting and is usually successful. The September meeting is a display of fruits, and the October meeting a display of grapes and vegetables. Our October display was the finest ever seen in the county. Some said it exceeded the county fair in quality if not in quantity. We are endeavoring to interest the ladies, especially the wives and families of the members, by having them prepare papers on topics not especially relating to horticulture, but on such subjects as they may choose.

The fruit crop in our county was very poor indeed. The frost of May 17, killed nearly all the grapes in the county, and in fact hurt all the different kinds of fruit. Our society is not as large as the Portage County Society but I wish that it could be as successful as the Portage County Society.

Mr. Farnsworth: I had expected to bring with me the report from the Lucas County Society, but I have not, as yet, secured it, but will do so in time for publication in the annual report. I might say that our local

society is conducted on a plan similar to that of others throughout the State, and we are very successful. Our membership is large, not perhaps strictly horticultural, as a great many of us are engaged in agriculture as well as horticulture. With us the lady members have a separate program which they carry out, meeting at the same place we do, but our society grew to such large numbers that we found it impossible to hold our meetings in the same room with them—excepting at the noon hour, at dinner, when the two societies unite in their attack on the table—and the ladies have separate officers, and a different meeting room, and they are much pleased with the arrangement. We both unite in discussing the same dinner, however, even though we can not unite on topics of discussion. Our number is increasing. I do not know the exact membership, but we have a large society.

C. L. Whitney: I want to say one word in addition to what I have already said, by way of explanation, for fear I might be misunderstood. There is a society, called the Northern Trumbull County Society, which is living and well. A few who used to belong to the Trumbull County Society, living in the northern part of the county have organized another society, taking in one or two townships in Trumbull, Ashtabula and Geauga counties, and their society is still living. They used to have a large attendance, averaging from seventy-five to eighty, but it is not quite so large now. Of course a new broom sweeps clean. There is not a real horticulturist in either of these townships. Of course there are some of them who like to discuss fruit, but none of them are growing fruit as a business. That society has been organized for six years, and I think their attendance is about forty-five or fifty now perhaps. The last meeting of the Trumbull County Society was held at the home of a large fruit-grower. He had never attended our meetings and we thought we would get him to open his house to us for a meeting in order that we might interest him in our work. He said he would be glad to have us come. We went there and afterwards the president of our society, Mr. King, asked him to join the society, and he said he did not think he would, and he gave as a reason that he thought the society would do more hurt than good to horticulture, as his idea was that it would stimulate the planting of fruits and induce others to go into the business of fruit growing, and thereby overstock the market.

Mr. Aldrich: In the absence of our delegate, and as perhaps the subject will not be recurred to again, I will say a few words in regard to the Columbus Horticultural Society.

Some of you, who are familiar with our work, know that we have never been able to secure as large an attendance as has been reported here by some of the other popular societies. Why that is I do not know, but

it is nevertheless true. We have usually held our meetings at one place, but we sometimes vary from that. During the last year we have met at different villages throughout the county, the regular place of meeting being the Columbus Experiment Station. Our attendance runs from fifteen to thirty at each meeting. The work that is done there I think will be equal to that of almost any local society in the State. We usually select some topic and make a specialty of that topic for the meeting. We are quite fortunate in having as members of our society gentlemen who make a specialty of horticultural work, and their investigations are original investigations, and their experience is valuable. We have been publishing, during the last two or three years, a quarterly periodical, which embraces the proceedings of our meetings, and the discussions and all papers presented and read at each meeting, and during the last year we have had some very elaborate reports which added very largely to the value of an annual report that we also publish as a supplement to the Journal. We call this paper the Journal of the Columbus Horticultural Society.

There was a report which was of great value to the botanists published by the committee on Botany, for that committee had been engaged in making an original collection of all the wild plants that could be found in Franklin county, and it was thirty or forty years since a report had been prepared by Mr. Sullivant, a botanist of that county, and many plants were found that were not noted in his original list. There was also a very elaborate report published by Mr. Weed, whom we had the misfortune of losing since that report was made. It consisted of a report of 125 or 130 printed pages, giving descriptions of all the known insects injurious to horticulture and flower culture and vegetable gardening, with suggestions as to the method of abating them. These were considered very valuable and were put in separate pamphlets and preserved for the use of future members. We have lost Mr. Weed from our membership, and we feel his loss very much, but at the same time his place is nearly filled by other gentlemen who have more recently joined us. Professor Webster has taken his place at the University. He is a man who goes out through the fields and examines the trees and he has already given to us quite a large list of insects found by him injurious to various plants and trees, that had not been recognized, at any rate in our portion of the State, heretofore. His work is very valuable from a scientific point of view. It is possible, and I have sometimes thought, our discussions and papers have been a little too scientific for the general public; the reports of the committees have been a little too much of a scientific character, although our Secretary tries to avoid this as much as possible. We are doing about as well as usual. I think our attendance has been increasing during the past

year from the average attendance of preceding years, but we have never succeeded in enlisting as many as we should in that county in attending our meetings.

Mr. L. B. Pierce: There is a horticultural society in the adjoining county—Summit—where I live, and I presume its secretary will be here to report to-morrow, but in his absence, I will say that the society is in a very flourishing condition, having fifty members or over, and it is fortunate in having as members many professional men in different lines. We have as regular members of the society, Professor Claypole and his wife, who is a very accomplished woman. They give excellent reports almost every month. Our reports are not published, except a meager report in the county papers. It is an outgrowth of the Portage County Society and its meetings are conducted in the same manner. I am glad that they have a professor in Columbus, who is making original investigations in entomology, for nowadays, instead of giving you the benefit of their own observation in entomology, they refer you to somebody else who has written on the subject and we do not get any thing new; no new ideas are advanced and we get no original opinions.

Mr. Miller of Ottawa county: I have no prepared report. We have in our county no organized horticultural society, as the members of this Society, who visited us at our summer meeting, are aware.

Our fruit crops this year were very fine, both in quality and quantity. The frosts of May came down a little on us, but at harvest time there was no visible damage to be seen. The peach and grape crops are our great staples, and it was truly a magnificent one this year. Our apples were finer in quality and the quantity greater than it has been for ten years, while a local scarcity east and southeast of us made a good demand for them. The Experiment Station has been doing some work in our county, of considerable value to fruit growers, but I suppose we will have a report of that later. Our fruit growers are alive to the fact that the subject of spraying is an important one, and one that we will have to take hold of strongly hereafter. Many of our fruit growers have spraying machines and are testing them thoroughly, and in most cases they are using them with noted success.

Mr. Pierce: Could you see a marked difference in the orchard, between where the spraying machine was used and where not used?

Mr. Miller: Yes, sir; but the unsprayed were nice this year, and the sprayed were exceedingly nice. The difference is very marked. You could notice it in handling the fruit very plainly, but looking casually you could not notice the difference. In my orchard, I noticed there were much fewer culls and fewer injured by curculio where spraying was practiced thoroughly.

Mr. Ohmer: I feel somewhat sorry that Mr. Miller did not come here with a written report. It was his duty to do so, and if there is a county in the State that should have been ready with a good report, it is his county. That county is almost entirely covered with fruit. We had our last summer meeting there, and we all saw a great deal in the fruit line that was new and interesting to us, and I am extremely sorry that we have not a good and extended report from that region. It should have been an elaborate report, as I am sure it would have been instructive to us all, and I hope he will go home and write such a report in order that we may have the benefit of it in our annual report hereafter to be published.

Mr. Miller: Our fruit crop has kept us very busy up to this time, but I will agree to write a report for publication in the published proceedings.

Mr. Pierce: Did you market all that big fruit crop profitably?

Mr. Miller: Yes, sir; all the fruit of good size we sold profitably. We had a great many small peaches this year for which our fruit growers gave all sorts of reasons, but my own opinion is that it was a lack of fertility in the soil. I never saw a season when fruit would sell so rapidly.

Mr. Ohmer: Upon the island they have organized a company and built a house and prepared themselves to sort the fruit. It is an excellent idea, and I have no doubt it will pay them well. This was on Catawba Island, and I took some of their cards home with me, and recommended the fruit to our commission men in Dayton, and I assured them that the fruit would be uniform in size and nice all through—as nice on the bottom of the basket as on top; and this was so, but unfortunately all that came to Dayton were very small and many of them were not fit to sell, they were so small. When we were there, we were shown three grades that they picked and sold, and the fourth grade they threw away, but I suppose they found such a good market, that they put them all in, and by so doing they injured themselves more than they have any idea of.

A Member: May be it was a fourth class market.

Mr. Pierce: After my visit to Catawba Island I took notice of their fruit whenever I had an opportunity. I could tell their fruit from the peculiar marking of their baskets. It was of a uniform size, but that which came to Akron was very small.

Mr. Miller: I do not belong to the fruit shippers' association, but there was such a number of people that wanted great big peaches this year, that they could not supply them all.

Mr. Ellithorpe: So far as the grading of fruit is concerned, we have two companies there who grade fruit. One of them, the Catawba Island Fruit Company, uses the Ellithorpe grader, and the Union Fruit Company

uses the Jones grader. The Jones grader is made in Pennsylvania. The Ellithorpe grader is made at Catawba Island. We make four grades, and sometimes five. The fifth are culls, and even these, when there is nothing but small fruit, will sell from a half dollar to a dollar a bushel, and Catawba Island fruit growers will take it every time. We sell our fruit right there. We do not ship to commission men at all. We really haven't any use for them. This culled fruit is just alike all the way through, and there is no rotten fruit, but some of it would not measure over an inch and a quarter through it. We call it cull fruit. The finest peaches all go to first class cities, as a rule, because the price there is better. Our fruit is all put in baskets with graders and whatever the size is on top it is the same all through. We have been raising fruit there for seventeen or eighteen years for commercial purposes, and when we did not raise but a few peaches, I have seen my wife offer them at ten cents a bushel, and they were as big as you ever saw grow, and the lady to whom they were offered declined to take them, saying that it was too much for them. But now, when we raise two hundred thousand bushels, it is no trouble to sell them, and we sell them right there. When we raised only thirty or forty thousand bushels the same buyers would not be there that are there now. We now can not raise enough, no matter how many we raise. I never saw the market so good as it was this year for some classes of fruit. The warm weather had a great deal to do with the price of fruit. If the weather is cool very little fruit will answer.

At the request of a member, Mr. Ellithorpe explained the manner of operating the Ellithorpe grader, and Mr. Miller did the same for the Jones grader.

Mr. Trowbridge: I have seen these graders in operation in Florida, but there are other graders that they prefer to them, even. The last that I saw was a little ahead of any that I had previously seen. It is a very valuable invention for grading oranges. It not only grades them, but the fruit when it drops from the grader falls on a piece of tissue paper that has the name of the grower on it, and this paper is twisted around the fruit by the action of the machine.

Mr. B. F. Albaugh then inquired as to whether plums were graded, and a member answered that they were not.

Vice-President Aldrich: The committee on order of business have prepared for the afternoon a general discussion on small fruits. This matter is now before you. Perhaps, the strawberry being the fruit considered of the most importance, we will take up first the strawberry.

Mr. Tussing: I came up here to get a little advice as to what would be the best berry to fertilize with the Haverland and Bubach. I have not

found any thing that is satisfactory and I would like to have some information from the Society on this subject.

Secretary Farnsworth: There is one variety that succeeds with us to use with the Haverland and that is the Pearl. It is similar to the Haverland and can be picked and marketed with the Haverland. It is somewhat variable. After I had grown it for one year I was discouraged and neglected to plant a great many, but at fruiting time it turned out well. It is similar in appearance to the Haverland and that is something of an object, as we can pick them all in the same basket.

Mr. Ohmer: We have a strawberry that is grown by a member of our horticultural society called the Dayton, which is not only large but it is very productive. Perhaps some of you have tried it. I think that this would be a very good berry to cultivate as well as to fertilize with as it is a very early berry.

Mr. Pierce: Have you got it to sell, Mr. Ohmer?

Mr. Ohmer: No, sir, I am not growing fruit to sell. I am now growing fruit to eat and give away. I have neither plants nor fruit to sell.

Mr. Aultfather: I think the Sharpless a good fertilizer with the Haverland, but I prefer the Pearl.

Secretary Farnsworth: There is one other variety that I have strong hopes of filling this want and that is the Enhance. From what I have seen of them I think they will prove valuable as a fertilizer and quite productive of fruit, not quite perfect in form, but I think quite as productive as any perfect flowering variety we have.

Mr. Trowbridge: I have known the Haverland ever since it has been produced. I saw the first plant that produced the first fruit. Now these gentlemen talk about the Pearl. I secured the Pearl from two different sources, and it is quite a different berry from the Haverland. It will not do to pick together in the same basket at all. The Pearl, as grown by me, is a very rich, dark berry—rich in quality and of a rich acid flavor—and would not do to put in the same basket at all, as grown by me. Of course they vary in different soils. The Pearl acts with me very much like the Great American. It is very productive, a little inclined to rust, and not at all the berry described here by the gentlemen. The flesh of the berry is of a rather dark character. I have been troubled for years, ever since the Haverland was brought out, to find a berry to go with it, but I have not seen any thing to go with it that could be picked in the same basket with it.

Mr. Bilderback: I have fertilized the Haverland with the May King and I found it did very well. The result was the same with the Bubach.

Mr. Trowbridge: The May King, so far as color is concerned, is all right and it blooms early enough, but the trouble is, it is a poor cropper.

A Member: The May King is the best berry that I can find to fertilize with.

Mr. Aultfather: The Pearl with me looks somewhat like the Haverland and they can be grown advantageously together.

Mr. Ford: There is one matter in this pollenization that seems to be overlooked. My belief is that there is no staminate variety that will bloom a sufficient length of time to thoroughly pollenize any pistillate variety. They don't remain in bloom long enough to do it. So I think there should be more than one staminate variety planted in order to thoroughly staminize the pistillate variety. The plan I would adopt, although I am not a grower for the market, is to have a few rows of one kind of a pollenizer and some of another, unless I mixed them all together.

Mr. Trowbridge's description of his Pearl don't coincide with the description I give the Pearl. I have seen it growing at the Experiment Station and have had it ever since it has been introduced, in a small way, and it is not as dark by any means as the Great American, and the foliage is of a different shape, unless I have forgotten how it looked. It is rather pointed and inclined to have considerable of a red color in the flesh. I have no doubt the Pearl is a good variety as a fertilizer.

Mr. Pierce: I find on my ground that the Charles Downing is the best I can find. It holds out well but it does not begin as quick as some others, but it holds out as long as any berry I raise.

The President: You are getting away from the subject.

Mr. Crowe said that if he were planting ten thousand acres of berries he would plant nothing but the Dayton; it is a perfect berry with a good blossom and boys from 15 to 16 years of age can pick 175 quarts in a day.

Mr. Babcock: What effect, if any, does the pollenizing of one variety of berry have on others?

Professor Green said that investigation has satisfied workers at the Experiment Station that no one knew any thing about it. I shall say, in regard to the question asked by the gentleman here, as to what berry is best to use as a fertilizer, to fertilize the Haverland and Bubach, that it depends a great deal on locality; some localities, as you have seen here, prefer the Pearl, others the Enhance, and so on.

Vice-President Aldrich: Is there any thing further on the subject of the strawberry? If not, we will recur back to the original order of business and call for reports from *ad interim* committees.

In response to the call of the President, Professor Green read his *ad interim* report as follows:

AD INTERIM REPORT.

[Read at Annual Meeting, Ravenna, by W. J. GREEN.]

The severe frosts of May 5th and 17th, that visited all parts of the State, did much damage to all fruit crops at Columbus. In some parts of the county apples escaped partially, but pears, quinces, plums and grapes were almost wholly destroyed. Strawberries, raspberries, blackberries, currants, gooseberries and cherries gave partial crops. For this reason it is not possible to make a satisfactory report on new varieties. All that can be done is to give estimates.

The Dayton, a new strawberry soon to be introduced, gives promise of considerable value as a pollenizer. It is early, of good size and quality, and quite productive. The only doubt that I have concerning it is to its hardiness. The blossoms were all killed on the Station grounds, but the same was true of many other perfect-flowered sorts, although not of all. It is somewhat of the Sharpless type, hence the fears as to its hardiness; and these fears have been to some extent confirmed. It is earlier than Sharpless but the berries are not so large. It is said to be earlier than Crescent, but we were not able to determine that point at the Station. On the whole it is worthy of trial.

The Greenville is a competitor of the Bubach, as it resembles that variety in many particulars. The berries are rather smaller than Bubach, but firmer, hence it may take the place of that variety for distant shipment. It is not introduced, but market growers should give it a trial as soon as they can get hold of it.

Muskingum is another promising variety soon to be introduced.

Brunette and Farnsworth both have decided merits as varieties for the home garden because of their good quality. They do not seem to promise much for the market, but the originator of the Brunette claims he finds it profitable. Surely its fine color and high quality would find for it ready purchasers wherever it became known.

Market growers in this State will hardly find in Michel's Early and Stevens what they want, although both are early. No doubt Michel's Early will prove valuable in some sections, but the berries are too small and there are too few of them, unless one can get an extra price sufficient to compensate. Stevens is weak in foliage, and in consequence it produces little fruit.

Enhance is one of those varieties that people will not agree upon. It is very hardy in bloom, vigorous and productive, and these qualities ought to satisfy most growers, but some object to its shape and quality. It has faults, but my impression is that growers will do well not to discard it without a thorough trial.

Parker Earle is a variety of unusual promise. The plants make so few runners that there will hardly be any necessity for removing or thinning out any, even though hill culture is practiced. It is productive enough, and possibly to a fault. Good cultivation will, no doubt, bring up the size to the requisite standard.

In general, the imperfect-flowered sorts withstood the frost better than others, but Enhance and Parker Earle prove to be almost exceptions to the rule.

Concerning other fruits there is little to be said; more than that, we had no fair chance to test them. Thomson's Early Prolific is a promising early, red raspberry, and I hope that it will live long enough for the Pomological Society to give it a pruning. No doubt it will, for it has merit as an early sort. Smith's Prolific, on the other hand, will hardly cause the above society any trouble, as the orange rust will put it into an early grave.

There is nothing very new in any other small fruit crop. As a contribution to the Green Mountain-Winchell contest I would say that the two names appear to stand for the same variety on the Station grounds.

Regarding the experiments in spraying, it will not be out of place to give a summary here. Essentially the same results have been obtained in preventing apple scab as have been reported elsewhere, but in addition, some advances have been made. But little difference was noted in the efficacy of the modified Eau Celeste and dilute Bordeaux mixture, but copper carbonate gave results inferior to both. The dilute Bordeaux mixture contains four pounds copper sulphate and four pounds lime to fifty gallons of water, or but little more than one-fourth the strength ordinarily advised. This is cheaper than any other mixture, and admits the use of Paris green or London purple in conjunction with it. These points of superiority make it decidedly the best mixture to use in nearly all cases, and particularly upon apples.

The apple scab works injury in several ways. It weakens the foliage, reduces the size of the apples, and renders a considerable portion of them unmarketable. The combined effects tell very largely, in some cases, upon the market value of the crop.

We found, upon careful examination of the Newton Pippins, that the scab reduced the size very materially. The average number in one bushel of scabby apples of this variety was three hundred and seventeen, and in one bushel free from scab, two hundred and two. The average weight per apple was two and a half ounces for the scabby and four ounces for those free from scab. That is, one hundred bushels of scabby Newton Pippins would make nearly one hundred and sixty bushels if the scab could be entirely prevented. We did not accomplish this, however. The average gain in size was only ten per cent. for Newton Pippins, twenty per cent. for Benoni, twenty-three per cent. for Northern Spy, and thirty-six per cent. for Rome Beauty. There is still another gain in the per cent. that were marketable. The difference between sprayed and unsprayed, in favor of the sprayed, was forty-nine per cent. for the Newton Pippin, thirty-one per cent. for Benoni, twelve per cent. for Northern Spy, and nineteen per cent. for Rome Beauty.

The final test, however, is the market value. This was determined by placing a quantity of each variety upon the market, and selling them for what they would bring. Assorting into three grades, we found, by actual sales, that one hundred bushels of each variety would bring the following sums: Newton Pippin—sprayed, \$48.91; unsprayed, \$22.80. Benoni—sprayed, \$56.70; unsprayed, \$23.60. Northern Spy—sprayed, \$65.95; unsprayed, \$41.90. Rome Beauty—sprayed, \$73.44; unsprayed, \$39.70.

There is still another factor to be considered, viz.: The influence of scab upon rot. Scabby apples rot much sooner than those free from scab, but our data is yet incomplete on this point. Apples of each variety, both scabby and free from scab, were put away for keeping, and thus far those free from scab are keeping much the better, but the experiment is not yet completed.

The exact effect of spraying, upon the foliage, has not yet been determined, but the leaves hung on sprayed trees longer than upon those unsprayed, and there were fewer windfalls from sprayed than from unsprayed trees.

Our experience in spraying pear trees was similar to that of other experimenters, viz.: We were able to prevent premature dropping of the foliage, which is so common with many varieties. We found, also, that spraying with Paris green prevented, to a great extent, the work of the curculio, which, in some sections, is considerable. The combination of dilute Bordeaux mixture and Paris green was more effective than Paris green alone, for the curculio, and decidedly better for the foliage. The beneficial effect of spraying, in preventing rot, was also very great. No notes were taken on the early varieties, in this particular, but Vicar of Wakefield, stored in a common cellar, were examined on the first of December, and all of the unsprayed were found to be rotten, while one-half the sprayed were sound. No doubt the difference is quite as great in the early varieties, in all sections where the pear scab is abundant.

Spraying plum trees, to prevent the work of the curculio, has been shown, by another season's trial, to be sufficiently effective for practical purposes. There is, how-

ever, much risk attendant upon the use of either Paris green or London purple upon plum trees, even though used very dilute. We found, the past season, that the danger may, in some cases, be so great as to preclude the use of this method in practice. When the arsenite is combined with the dilute Bordeaux mixture, however, this danger is obviated. When the combination is used the preventive effect upon the curculio is not lessened, while the foliage remains on the tree in a healthy condition. This has a beneficial effect upon the health of the tree, and increases the size of the fruit, to some extent.

The result of experiments upon the raspberry and anthracnose are given in the October bulletin. The experiments are not complete, but appearances indicate that the remedy is efficient.

Potato blight experiments were similar to those formerly reported, with the difference that the dilute mixture above described was used. It was found to be effective, which is important, since the saving in materials is considerable. Recent literature is full of examples that show this remedy to be a practical one, and potato growers can no longer afford to neglect it.

Secretary Farnsworth: I find one objection to the use of the Bordeaux mixture, and that is that it sometimes occasions difficulty in using it. I used the Nixon nozzle, but it did not seem to work well, because it did not go through the nozzle. We made one or two lots that we could not get through the strainer. I am satisfied that many persons have given up the use of the mixture in disgust because they could not get it to pass through the strainer.

Mr. Bilderback: Mr. Green, did you ever think that the use of these sulphates would become injurious to the roots of the trees? Would it ever poison them?

Professor Green: Of course it is poisonous, and it will kill a tree if you get enough of it on, but I don't think there is any danger in the solution I have mentioned, because the lime neutralizes the copper. You should use as little of the copper as possible in the preparation of the solution. Find out just how little you can get along with and still get good results, and use no more.

A Member: Is there any time at which it is best to apply the Bordeaux mixture?

Professor Green: Ordinarily you have to spray whenever you can, so that I don't know whether there is any difference or not. I sprayed when I got ready.

Mr. Trowbridge: I think we got better results when we combined the mixture than we did when we used the Paris green alone. Mr. Miller can give us some information on this subject.

Mr. Miller: I have found better results where the mixture was combined. The effect on the foliage of the tree was very decided, and where it was sprayed it remained on the trees until the last. In a portion of the orchard where no spraying was done the foliage there was the first to fall.

The fruit also held on better where the trees had been sprayed, but it was more distinguishable on the apple tree than on the pear tree.

Mr. L. B. Pierce: Was not the reason that the fruit held on or hung on longer that there was less wormy fruit?

Mr. Miller: I think it was because the fruit was less wormy, and because the blight effects the stems as well as the leaves of the trees.

Secretary Farnsworth: I spent a day or two at Euclid, and they told me that where the grapes were sprayed the stems remained healthy, and after the bunches had been picked a short time they would dry up, and where they were not sprayed they would not dry up and the grapes would fall off. Even where the berries appear perfect they think it would pay to spray for the keeping quality.

Mr. Ford: There is one little matter that I would like to speak of. We are without fruit this year. From three hundred apple trees we picked about three bushels of apples. Where we usually got 150 bushels of pears, this year we got about three bushels. What is more peculiar than any thing else, out of the three bushels we picked we failed to find a single seed or core, and we examined them very carefully, over and over again. There is an occasional lump, where the core ought to be, of something hard as a stone, but there was no sign of a seed, or speck of a germ nor seed nor core.

Mr. Woodward: We had the same thing happen in our county.

Mr. Hurst: I saw an apple and a pear growing this fall on the same twig. It was a very beautifully shaped pear. They grew on an apple tree.

Mr. Ford: To whet your appetites, I will say that on to-morrow morning I will bring a branch of an apple tree here that has a perfect Roxbury russett on it, and at the same time, within four or five inches from that it has green apples, as far removed from the Roxbury russett as can be.

Mr. Pierce: I want to hear something about Fay's prolific currant; in what respect it differs from others, as to its value either for commercial purposes or for home garden?

Mr. Trowbridge: I have grown Fay's prolific very satisfactorily. While it probably will not produce as many bushels to the acre as some others, still it is a very satisfactory currant. It is something like the White Dutch currant, and it grows about a strong. In some places it does not succeed as well as it ought to, but still there are a great many plants sold.

Secretary Farnsworth: I don't think anybody would be safe in planting Fay without knowing what it does in his own locality. There are places where it succeeds admirably and at other places it does not do

well. On my own ground they are absolutely worthless. My ground is a rich, dark, sandy loam. I have seen them on heavy clay soil where they were worthless also. Where you can succeed in growing them they are large and handsome and sell admirably. I can grow a peck of the Victoria to a quart of the Fay. At Dayton I was on the ground of Mr. From and he told me that they were entirely worthless with him, and Mr. Cushman told me the same thing.

A Member: I have grown the Fay ever since it has been introduced and I have been unable to distinguish the least difference between it and those I bought twenty years ago, called the Cherry. If there is any difference it is that they are not quite so productive, but I lay that to the difference in the location, but I assure you that I can see no difference between that and the Cherry currant.

Mr. Trowbridge: Horticulturists will disagree. I grew the Cherry currant for five or six years and I could not get a pint off of them where I can get two quarts off the Fay. I find the Fay much better than the Cherry.

Mr. Pierce: I have grown them side by side and I think there is a marked difference between them. The Fay with me is a slow grower and the leaves rather crinkle and bunch up, while the cherry is a very rapid grower with smooth leaves. The berries are about the same size and about the same in productiveness. There is very little difference in the length of the stem but in the bunches there is quite a difference.

Mr. Wilson: I have had the Fay for a number of years and the only fine clusters I have seen are the clusters in the catalogue. I have given the Fay excellent culture and from my experience with it I call it a fraud.

Mr. Woodward: I mentioned this to see if there were not a vast amount of stock sold that was not the Fay at all. I think there are a great many sent out that are not Fay's at all.

Mr. Ohmer: I would like to hear something said of the Crandall currant. Are they an improvement on the old black currant?

Mr. Ford: They are a vast improvement on the old black currant. I will give my view of it. In the first place I bought the currant of a man named Crandall in Kansas. He said it was a seedling of a wild currant which he propagated, and I named it the Crandall currant in honor of the gentleman. There have been twenty-five or perhaps fifty times more plants sold for Crandall than were ever propagated of the true Crandall. One man, who never bought but thirty-five, has sold five times as many plants as he ever could have propagated from those, and others are doing the same thing. For two years past we missed getting crops, owing to frosts after the bloom had fallen, but three years ago last fall many people came from a distance and saw the Crandall currant in fruit, and there

was but one of them that did not give his order for plants. Mr. Miller of New Philadelphia, gave a testimonial saying that he saw it and that it would yield five hundred bushels to the acre, but I don't think it would do any thing of the kind. We had two rows of them and they bore bushels on bushels of berries. When we bought the stock of Crandall we supposed the plants had all been grown from one plant. Afterwards Mr. Crandall wrote us that he had propagated from five seedlings and they were all so near alike he could not tell the difference. That year that we had the enormous crop we had a very heavy frost when they were in bloom and it did not injure them, and we said they would not be injured by frost when in bloom. As to the variation in the size of the fruit, I think it can be accounted for from the fact that the new thrifty growth produces large fruit, often over three-fourths of an inch in diameter, while on old canes from the same root, that made but a feeble growth the previous year and are heavily loaded, the fruit will be very much smaller.

Mr. Pierce: How about the half dozen kinds of Crandall?

Mr. Ford: There were five seedlings, but he had selected these from others that were so near alike that he could not see the difference.

Mr. Aldrich: Is fruit produced on the growth of last year as well as upon the second year?

Mr. Ford: It produces on the old wood and the new wood.

Vice President Aldrich: Our President has arrived and he will now preside.

On motion of Mr. Pierce, a recess was taken until seven o'clock this evening.

EVENING SESSION.

WEDNESDAY, *December 9, 1891.*

The meeting was called to order by President Campbell at 7 o'clock, P. M.

Mr. Pierce, of the committee on Order of Business reported as follows: The first thing in order will be the appointment of committees by the President, then the address of welcome by Rev. Mr. Wilson, who takes the place of the mayor of Ravenna, who is absent, and the response to the address of welcome will be made by Mr. O. W. Aldrich, of Columbus, Ohio. The exercises on the printed program for the evening will follow in their order.

The following committee on Fruit was then appointed by the President: George W. Trowbridge, of Hamilton county, B. F. Albaugh, of Miami county, and William Miller, of Ottawa county.

President Campbell: I have a letter from the mayor of Ravenna saying that business calls him to the city of Chicago and that he will not be able to return until Thursday. Consequently, the address of welcome will be delivered by Rev. Mr. Wilson.

Upon being introduced by the President, Rev. Mr. Wilson said:

Mr. President, and Ladies and Gentlemen:

I am not the mayor of Ravenna, nor do I possess any legal rights above that of the ordinary citizen—except the right to solemnize marriages, and as the most of you are married you do not need my services in that direction—but I am here as a citizen of Ravenna and a member of the Portage County Horticultural Society to bid you a hearty welcome to Ravenna.

I think this is the 25th anniversary of the organization of the State Society. For twenty-five years it has done excellent service in a noble organization. Three things have conspired to give it prominence: Its work, its members, and its men and women. The purpose of the society is one that commends itself to every lover of nature and manhood. There are so many departments that it is almost impossible to name them all. In the one name of Horticulture we include Floriculture, as well as the cultivation of vegetables and fruits, and what remarkable progress has been made during its organization? From a comparative infant it has grown into a large and most mature man, and our State has made wonderful advancement in this department. The State is wealthier in this respect than it was twenty-five years ago, but that wealth does not belong to the few horticulturists who gather here from year to year, but it belongs to the citizens of our State; for he who cultivates a beautiful flower garden does not cultivate it for himself alone but for every boy and girl to enjoy the beauty and color of that garden who may wish to do so. It is something that makes your neighborhood richer because of your enterprise, and it is so throughout our State that the boys and girls are made richer in heart and richer in the elements of manhood and womanhood because of the influence of this organization.

I go back to 1877 when this organization met here at the first meeting of the State Society here. There were many faces here then that are not here now. I recollect the venerable Doctor Warder, a man ripe in experience, wisdom and judgment, ready in wit and most earnest and cordial in all his efforts. I remember the former secretary; I remember Mr. Tryon, whose face is photographed in my mind as I saw him a few weeks before when he bid us good bye. But they are not dead. They are speaking by their works to the members of this society and urging them to be up and doing and to be earnest and faithful in carrying forward the enterprise with every possible ability so nobly began by them. We have some noble men and women who might be named, who have given their energies, talent and time to this organization.

We come here on the 25th anniversary of your organization, and what was twenty-five years ago a child has grown into a pretty rugged boy and it has had a pretty happy experience. We appreciate your visit and we welcome you here to Ravenna, the county seat of Portage county, to attend the 25th anniversary of your organization, and, Mr. President and members of the Society, we extend to you a sincere and hearty welcome.

After the applause which greeted the address of Mr. Wilson had subsided, Mr. Aldrich, of Columbus, responded on behalf of the State Society as follows:

On behalf of the State Horticultural Society I desire to return to the citizens of the village of Ravenna, and especially to the members of the Portage County Society, our heartfelt thanks for the warm words of welcome which have greeted us this evening.

We have met here, as has been said, for the purpose of advancing in this State the cause of horticulture, divided as it is into various branches of the culture of luscious fruits and beautiful flowers, which has dedicated itself to the people as well as to the practical purpose of seeing how we may better our financial condition by developing the fruit and flower. As your speaker has recalled to us the names of the noble men who formerly composed this organization we look back with regret but with honor to their memories. We feel that there are perhaps few of us at this time that are worthy to be considered as standing in their places. And as we look back on their memories and remember them and the work they performed, we take courage and go forward to do what little we can do to take their places and carry forward the cause which they labored so long and faithfully for, and which they loved so well. When we came here to the city of Ravenna we came not as among strangers. The fame and name of your society is not confined to the limits of your own county or your own part of the State, but it has reached out over the State, and when representatives of your society at Columbus gave us a most cordial invitation to come and meet with you, we were glad, because we knew in coming here we came among a people who loved the cause, and knowing that you had a warm place in your hearts for the work we were doing. We come then as among friends, among those engaged in the same cause that we are engaged in and we come feeling that we are members of the same family engaged in the same great and glorious work. I need not multiply words further, but on behalf of the State Horticultural Society we extend our heartfelt thanks for the kindly greeting we have received.

President Campbell: I presume the next thing in order is the President's address, which I will proceed to read:

My dear Friends and Fellow-members of the Ohio State Horticultural Society:

It gives me great pleasure to be able again to meet you at our annual session in this pleasant city of Ravenna, after an interval of fourteen years since we had a meeting at this place. Many changes, and some of them very sad ones, have occurred since that meeting on December 5, 1877, and many of our loved and honored members who were present with us at that time have passed away, and their faces are seen no more. But I must not, in the brief address which it is made my duty to offer, dwell too much upon past memories, for our business here is with the present—looking to the immediate interests and welfare of our Society, and its advancement in the future. We come together at these annual meetings to report progress in the pursuit of our several specialities, giving the results of our experience and observation not only for the information of our members, but for the benefit of the people at large, whose comfort and enjoyment, as well as health, are largely dependent upon the beneficent results of intelligent and skillful horticulturists. Recognizing the fact that the most valuable and practical information is brought out at our meetings through well-directed discussions upon the various subjects presented for our consideration, it can not be expected that I shall do more than suggest what may appear to me the best methods of getting the greatest amount of good from our efforts.

If any additions are desired to the program, as prepared by our Secretary, they should be arranged with the Business committee, and announced at the opening of each session. The subjects should be taken up in the order given; and the business of the Society will be performed much more rapidly and the reports made more concise and valuable, if the remarks of members are confined strictly to the question under consideration until it is finished. If other subjects are thought desirable, they can be presented through the Business committee or the question box, which will be opened at intervals when other matters are not under consideration.

I would also call your attention to the unusual and vexatious delay in the publication of our annual report, and suggest that an investigation be made as to the cause, and some remedy be found if possible.

It will be expected that I should say something of the meeting of the American Pomological Society at its recent session in Washington City. I can not, at this time, make more than a brief report of the meeting, and it would, if I were to attempt more than this, take up more of our time than would be desirable or profitable.

The meeting was the the twenty-third biennial session of this time-honored and useful society, and was held in the lecture room of the National Museum at Washington, D. C., from the 22d to the 25th of September, 1891, by invitation from Secretary J. M. Rusk of the Department of Agriculture.

The attendance was very good, the proceedings interesting and the results will be valuable to the fruit growing-interests of the country.

The President, Prosper J. Berckmans, of Augusta, Ga., was reelected, and C. L. Watrous, of Des Moines, Iowa, First Vice-President, G. C. Brackett, of Lawrence Kas., Secretary, and Benjamin G. Smith, of Boston, Mass., Treasurer. One Vice-president was elected for each State, the most of the old officers being reelected.

Secretary Rusk and his Assistant Secretary, Edwin Willits, were present, and welcomed the Society in appropriate words, recognizing the importance and usefulness of the work in which they were engaged, and the great good which had been accomplished since the organization of the Society, for the benefit of the people of the whole country in improved fruits and kindred productions, and their wide dissemination and successful culture. He expressed a desire that the Department and this Society should be brought into more intimate relations and that each should aid the other in the future prosecution of the work. Secretary Willits said:

"Your coming is an inspiration to us, and may your leaving be accompanied by a higher appreciation of what each in his respective sphere is accomplishing and a hearty co-operation in the great work in which we are jointly interested."

Vice-President Watrous handsomely responded in behalf of the Society.

The President's address was both able and interesting, replete with valuable information and timely suggestions for the future conduct of the Society so as to increase its membership and extend its usefulness to every portion of our country.

I have recently received a circular from the Division of Pomology, issued by Assistant Secretary Willits, further indicating the desire of the Department of Agriculture to co-operate with the horticulturists of the United States in carrying forward the work in which we are engaged. I will read the circular, and suggest that our Society take such action during the present session as may be thought proper.

U. S. DEPARTMENT OF AGRICULTURE,
Division of Pomology.

WASHINGTON, D. C., November 1, 1891.

To the Horticultural Societies of the United States:

As a means of securing concerted and mutually beneficial action between the Department and persons interested in Pomology and kindred subjects throughout the country, it is suggested—

1st. That, through the State Horticultural Society or similar organization, provision be made in each State and Territory for supplying to the Department for the Division of Pomology a complete and annually corrected list of officers and members of State and local organizations of fruit-growers, with their post-office addresses and the specialties in which they are interested.

2d. That the Secretary of each State Society send to the Department for the Division, as soon as determined, the name of the place and the date of each meeting, and, as soon as issued, the program for the meeting.

3d. That each society, State and local, supply the names and addresses of members

of a standing committee, consisting of reliable and experienced fruit-growers, to respond to the circulars of inquiry which may from time to time be sent out for the Division.

The Department, as far as practicable—

Make free distribution of bulletins and other publications of the Division of Pomology as well as those of other and kindred divisions, upon the basis of lists of members furnished.

Invites the sending of specimens of new varieties for estimates of probable value; of unrecognized varieties for identification; and of known varieties from localities in which they are specially successful, for examination and description. On application mailing boxes and franks will be sent for such purposes.

Distributes, at certain times, a limited supply of seeds, scions, or plants of imported or little known fruits; and these are placed for testing in localities where they are likely to receive proper care and suitable conditions of climate and soil.

The proposed co-operation will be greatly aided if the regular meetings of the societies of adjacent States are so timed that they do not occur on the same dates. This will make possible in some cases the attendance of a representative of the Department at a series of State meetings, and it is suggested that the Executive Boards of State Societies consider this when arranging for the dates of their annual meetings.

Very respectfully,

EDWIN WILLITS,
Assistant Secretary.

FRIEND CAMPBELL: Does not the above plan afford promise of added strength and efficiency to the societies while serving the purposes of the Division of Pomology? Under this conviction I may be excused in asking that it be given effect with the Ohio Horticultural Society. Please let me hear from you on the subject and oblige,

Yours truly,

T. T. LYON,
Agent in Special Charge.

Mr. J. M. Samuels, of Kentucky, the newly appointed chief director of the Horticultural Department of the World's Fair at the Columbian Exposition was also present at Washington, and expressed a wish that all the horticultural societies of the United States should do all in their power to make representative and creditable exhibits of the fruits and horticultural products of their States and sections, and promising to render all the assistance in his power in furtherance of this object. I have received several communications from him, asking that the Ohio State Horticultural Society should aid in every possible way to make a grand exhibit, and assuring us of his hearty co-operation. I will venture to suggest that the coming season will not be too soon for every member of our Society to begin his efforts to produce whatever horticultural production may be his specialty in its greatest possible perfection, to be exhibited at the proper season during the coming great Exposition. I trust the State of Ohio will see that these efforts are seconded by such liberal appropriations as may be necessary to produce exhibitions in every department of horticulture that shall be worthy of our Society and of the State whose name it bears. I see that our honorable brother Albaugh is to speak upon "Our Portion in the Columbian Exposition," and I think we can safely trust him to do justice to the subject.

The exhibits of fruits at the meeting at Washington were quite large and interesting; the South, however, furnishing the greater portion. An excellent and instructive exhibit of pears was made by Messrs. Ellwanger & Barry, of Rochester, New York; but the larger portion of the exhibits were from the South. A fair idea of the extent and character of the fruit exhibits may be gathered from the report of the committee of Awards, which was as follows:

The Wilder silver medal was awarded to the Virginia State board of agriculture, represented by Henry L. Lyman, Charlottesville, Va., 335 plates of apples, 27 plates of pears, 78 varieties of grapes, 5 plates of plums; Ellwanger & Barry, Rochester, N. Y., 112 plates of pears; P. J. Berckmans, Augusta, Ga., 8 varieties Japanese persimmons; 1 plate *Lemonium trifotiantum*, 2 plates Keiffer pears, 1 plate Hawaii pears, 4 varieties *pyma japonica*, 3 varieties figs; Rev. Lyman Phelps, Sanford, Fla., 8 varieties of lemons, 5 varieties of limes, 4 varieties Japanese persimmons, 1 plate pommela, and a highly instructive collection of citrus, hybrids, and crosses.

Bronze medal was awarded to Luther Burbank, Santa Rosa, Cal., collection of seedling quinces; Charles H. Hedges, Charlottesville, Va., 78 plates grapes; J. S. Harris, La Crescent, Minn., 28 apples; Wisconsin Horticultural Society, 39 varieties of apples; Jewell Nursery Company, Minn., 26 seedling apples; P. S. Dinsmore, Riverside, 29 plates apples; J. W. Porter, Piedmont, Va., 52 varieties of apples; J. L. Babcock, representing Tidewater, Virginia, 130 plates apples.

Special mention—H. S. Mehanes, Florida, pineapples from Indian River; S. A. Birch, Coveseville, Va., 4 plates superior market apples; A. M. Lybrook, Stuartsburg, Va., 8 apples of notable excellence; T. V. Munson, Dennison, Tex., 17 plates apples, 1 plate Keiffer pears; R. A. Wickersham, Clarksboro, Va., exhibit of notably well-grown peaches.

A large number of interesting and valuable papers were read on various subjects connected with Pomology and kindred topics, but it would be unprofitable at this time to attempt any detailed account of them; and a list of the speakers and their subjects would afford little practicable information. If necessary to supplement on secretary's report, I will prepare a synopsis of the more important papers for publication in our next report if we are so fortunate as to get it printed.

I can not let the occasion pass without some mention of the great loss we have sustained in the death of our eminent brother horticulturist, Leo Wiltz, who passed from earth on the last day of the year 1890, at his home in Wilmington. I do not feel competent to express in suitable words, our appreciation of our departed friend. We all knew him well, and loved him for his pleasant and genial social qualities, and we honored him for his great knowledge in all that pertains to Horticulture. We deeply and sincerely mourn his death, and he will ever be held in kindly remembrance by every member of our society.

A more extended and able tribute to his memory will be presented during this meeting, and I will only read a short and comprehensive statement of some of the more important events of his life which was published at the time of his death; but I presume that our Secretary will see that a fitting account of his life and work will be prepared for our report.

LEO. WELTZ DEAD.

DEMISE OF AN OHIO MAN KNOWN THE WORLD OVER AS AN AGRICULTURIST.

[Special dispatch to the Enquirer.]

WILMINGTON, OHIO, *December 31.*—Hon. Leo Weltz died at his home in this city to-day, at about noon, of Bright's disease of the kidney.

He was well known in all portions of the State, and was a recognized authority in agricultural and forestry matters. He was born in Prussia in 1825, educated at Heidelberg, and making landscape gardening a specialty, graduated from the Government Botanical Garden at Berlin. After serving for twenty years as head gardener to Alexander III, of the Russias, and associating with the famous Alexander Humboldt as student and assistant, he came to this country in 1851.

While living near Cincinnati he laid out private grounds of Salmon P. Chase, George H. Pendleton and others. In 1857 Mr. Weltz moved to Wilmington, where he

laid out the beautiful Sugar Grove Cemetery, which will in a few days receive his remains. For fifteen years he has been a member of the State Board of Agriculture, and has twice represented Ohio in the National Board of Agriculture. He was appointed by Governor Foster to fill an unexpired term as member of the Board of Public Works, and was nominated by the Republican Convention of 1882 to fill that position on the State ticket, but was defeated with the balance of the Republican ticket that year.

The same year he was chosen to lay out the grounds and superintend the erection of the Exposition Buildings of the State Fair association at Columbus. By President Cleveland he was appointed a special representative to investigate the fruit and forest trees of Russia, and report as to their adaptability to our climate. He was also a member of the State Forestry Bureau at the time of his death.

I will not further detain you from the more important business of our session.

Secretary Farnsworth then read his report as delegate to the meeting of the American Pomological Society, at Washington, D. C., September 22d, 1891, as follows:

REPORT OF DELEGATE

TO THE

MEETING OF THE AMERICAN POMOLOGICAL SOCIETY AT WASHINGTON, D. C., SEPTEMBER 22D, 23D AND 24TH, 1891.

Those of us who had the pleasure of attending this meeting will long remember it with kindly feelings. The only feature to mar the pleasure and profit of the meeting was the oppressively hot and unseasonable weather during our stay in the grand Capital City.

Mr. T. T. Lyon thought the reason that so many of our new seedling strawberries were pistillates was due to the fact that pistillate varieties, like Crescent, were generally used for parents. The lack of hardiness in so many varieties of the blackberry he attributed to the fact of its being by nature a sort of underbrush, or secondary and protected growth. He thinks that too much of the so-called advancement in varieties of fruits has been in the direction of size and appearance, at the loss of quality.

Hansell was said to require high culture and severe training.

Benjamin Smith, of Massachusetts, says the English gooseberry can be successfully grown if planted where the noonday sun does not strike them. They require high culture. He fertilizes them with cow manure.

J. H. Hale, of Connecticut, in his remarks upon small fruit culture, emphasized the need of a thorough preparation of the soil, and in fact, the need of thoroughness in every detail of the business from beginning to end. He would use fertilizers rich in phosphoric acid and potash, and deficient in nitrogen. Recommended wood ashes. He advised planting raspberries and blackberries eight feet apart each way, to allow of culture both ways by horse power. Most growers, he said, lose all the profits by not studying the "market end" of their business. They work too much and think too little. He advised a little "judicious laziness." Honest packing would tell in the end. You must catch the eye before you can catch the pocket-book. Small fruits grown for home use were always sure of a good market. A friend of his charged his family with the fruit used from a garden of one-half acre, and in one year it amounted to three hundred and sixty-five dollars.

J. T. Lovett considered the Parker Earle the best strawberry of recent introduction.

Professor Galloway urged the importance of spraying earlier than is usually done, three applications early in the season being better than six or seven later in the season. Large apple trees can be protected from apple scab at an expense of from ten to twenty cents each. Pear blight, he said, is caused by a micro organism, a class of plant life

lower than fungi, which enters the circulation through blossom or leaf. There was no known remedy as yet. The twig blight of the apple he considered the same.

D. W. Adams, of Florida, does not believe that fruit trees are totally depraved by nature. Thinks many growers prune from force of habit, and not because they can give any good reason for so doing. Every limb or branch removed is an injury, he claims, and there is no such thing as pruning for growth. The more pruning the less growth. Root or top pruning makes smaller trees. Does not believe in cultivation, as the three inches of surface soil was the best place for the roots. Incidentally he probably explained why he held this belief by saying that *he was so constituted that he found it easier to wait than to work.*

Mr. Cutler, of California, thinks judicious pruning usually prevents worse damage than it inflicts.

Prof. Bailey does not believe that cutting off a limb weakens a tree.

All practices in Horticulture and Agriculture are in a measure opposed to or different from nature.

Pruning is a necessity, but may be overdone.

Prof. Fernow said pear trees usually die in ten or twelve years in Texas.

Rev. Lyman Phelps, of Sanford, Florida, claims to have affected the outward appearance and flavor of oranges by the use of lemon pollen. He had sold six boxes of early fancy Tangrine oranges in Chicago for ninety-six dollars. He could not afford to pay the transportation on inferior fruit. He exhibited a plate of lemons affected by the pollen of a foreign variety. The citrus fruit is perfected through its rind.

Prof. Goff, of Wisconsin, said certain varieties are adapted to special localities, and temperature does not always correspond with latitude.

The further north a fruit can be grown successfully the more profitable it will usually be found, because nearer a region of scarcity.

Large bodies of water preserve a more uniform temperature.

Fruits may sometimes ripen earlier in the northern part of the State than in the southern. The cranberry will not succeed on soils having any clay or lime in them.

Prof. Riley says the curculio issues from its winter quarters before the plum leaves are open and feeds upon buds, etc. Thinks spraying about equal to jarring in efficacy, but cheaper.

There is more danger to the foliage of plum and peach by spraying than to the apple. The orange scab was conquered by putting a tent over the infected tree and filling it with a poisonous vapor.

For the apple maggot (*tripeta pomonella*) there is no known remedy except the destruction of the fruit. Insect might well be considered a blessing in disguise to the careful grower.

Mortimer Whitehead said it would require sixty thousand railroad cars to move the commercial grape crop of 1889. Over ninety million dollars are invested in peach growing in the United States. One thousand million dollars were invested in horticulture in the United States.

Sixteen by twenty feet was said to be near enough for peach trees. Corn might be grown the first and second years. Do not prune too early, nor later than August 1st. On airy good soil cultivation is the only fertilizer needed until bearing. The yellows was a serious enemy to this industry in many places.

A discussion of whole versus piece root grafting seemed to decide that whole roots make the best growth, and piece roots the greatest number of fibrous roots. A long scion on crown root was said to be the most profitable to nursery men and orchardists.

Mr. Harris, of Minnesota, would use crown roots four to six inches long and a short scion, in order to avoid the evils of such deep setting on heavy soils.

Minnewaski and Erie blackberries were recommended.

Prof. Goff says McMahon's White is equal in quality to Duchess of Oldenburger, a little later. Hardy and bears every year; *very handsome*.

Pratt, Smuck and Crawford will about reproduce themselves from seed.

Elberta was pronounced by all to be the best yellow peach grown. President Berckmans had seen five specimens that weighed 6½ pounds.

Moyer was condemned. Winchell, or Green Mountain, recommended. Globe is variable. Hill's Chili a sure bearer in New England. Keyport White is hardy also. Stevens' Rarieripe the best of the rarieripe class.

Prof. Van Daman recommended the Triumph gooseberry and Royal Church raspberry. Also the "Kansas," a new black raspberry.

Pecans grow wild as far north as southern and middle Iowa.

Prof. Taft, of Michigan, in his article on pruning, says the benefit exceeds the injury when limbs are judiciously removed.

The amount of injury depends upon the amount of leaf surface removed and the size of the wounds. The best way to manage a tree was by pinching as far as possible.

Pruning when tree is dormant prevents checking growth, but the wound may not heal as readily. Would have four to six branches on a tree.

He would cover large wounds with common paint, shellac, wax, etc. He considers the worst time to prune is just after the leaves start.

Plant food will pass through young wood faster than through old, hardened wood.

Do not head too high exposing trunk to heat and cold, and making top heavy.

Prune in June for fruit and in November or March for ordinary purposes.

T. T. Lyon advised pruning just before the movement of the sap.

Dr. Samuels, the newly appointed Commissioner of Horticulture for the Columbian Exposition, was present, and by instruction from the Board of Directors invited the Society to hold its next meeting in Chicago during the Exposition.

This is the only invitation of its kind given by the Board to any organization.

The invitation was referred to a committee, as was also an invitation to meet in California and one to meet in Michigan.

Going to Washington as I did almost directly from the magnificent display of fruit at our own horticultural hall at the State Fair, I was somewhat disappointed at the display of fruit.

Although many new, uncommon and interesting fruits were on the tables, still the display as a whole was not what I had expected to see.

McMahon's White (apple) was the handsomest fruit on the table.

A plate of Lincoln pears was also quite attractive, while the display of over one hundred varieties of pears by Ellwanger & Barry contained many uncommon varieties.

Luther Burbank, of California, exhibited a fine collection of seedling quinces.

The meeting, as a whole, was a very pleasant and instructive one.

President Campbell: The next thing on the program is a paper entitled "Our Portion in the Columbian Exposition," by N. H. Albaugh.

MR. N. H. ALBAUGH.

MR. CHAIRMAN: It would probably be better for this association if I had a paper on this subject, for sometimes persons who speak in public without a paper, find that the merit that a paper is entitled to over an extemporaneous address is that the paper has an ending. I hope there will be enough of my friends here, so that one of them, at least, will yawn and give me some kind of a cue when they get enough of this. There is another reason why I could not have a paper upon this question, for the first intima-

tion I had that I was to speak on this question was the program of the meeting, which was sent me by the Secretary less than a week ago—for which I thank my friend kindly, so that I need not be burdened with a paper.

There are in all the different departments of the World's Fair many officers. There is involved in that exhibition many millions of dollars, and it would be curious indeed, if with this number of officers, and especially with this number of dollars, if there were not some curious transactions had in that World's Exposition before its gates are thrown open in May, 1893. This Society, through its President, appointed the speaker and the ex-president of this Society, Mr. Ohmer, more than a year ago, as the representatives of this Society to go to Chicago, where they were promised a hearing before the "high joints" of that exposition to express our wants. The prominent horticulturists of the United States met in Chicago, and we had with us the Vice-President of the Columbian Exposition, and he said to us, in words specifically, that we had *carte blanche*—this is the proper word is it not?—(I must always ask my friend Ohmer, for he is authority on such things)—to say who should be Commissioner of Horticulture. We put our heads together with all the dignity we could command, and we chose Parker Earle as our choice for commissioner. But it was but a month or two until we heard mutterings here and there that we had not done it just right. The next thing we knew, a gentleman by the name of Maxwell, from California, had been selected by the sub-committee of three, of the thirty-three directors of the World's Fair, to be Commissioner of Horticulture. Unfortunately, personally I had no acquaintance with Mr. Maxwell, but I got his description, life size, from a paper published in Florida, which said that he was the principal partner in a saloon in California, and that he wore clothes of the finest cut, and parted his hair in the middle. When the Nurserymen's Convention, in its fifteenth annual session, met at Minneapolis, a howl of rage, loud and deep, went up from these western fellows—and they hardly ever say any thing you know—against having this commissioner from that far off Pacific coast, that land of bursted booms and boomlets. That association appointed a committee, consisting of three nurserymen, who, on the part of that association, were to go to Chicago and meet these thirty-three august directors, and upon bended knee beg and plead for a rehearing of the appointment of a Commissioner of Horticulture. That committee was composed of two men of national fame in the ranks of horticulture, W. C. Barry, of New York, and Captain Watrous, of Iowa, and the third was a member from Ohio, about the size of the gentleman who is addressing you. We went there and we found a gentleman by the name of Higgenbottom was chairman of the sub-committee of three, who had appointed this dude saloon-keeper of California, to tell us where our apples and peaches should be placed, and how classified, and we found, further, that the classification had been made. His appointment had been made, but not confirmed by the board. The classification commenced, horticulturally, at brandies from California and Burgundy wines, and so it went through a whole batch of that kind of horticultural products, leaving at the end a very small space for such products as load our tables here. The further we looked into it the more indignant we became. We called on Mr. Higgenbottom and solicited him, and he said he "guessed" we could have a meeting in their rooms in the large Rand & McNally building. At three o'clock that afternoon we called on several of the directors out of the thirty-three in the city of Chicago, but we found that the jury had set on the case and that we were not "in it." I don't know what would have happened a plain horticulturist, but Captain Watrous, of Iowa, is a prominent man of that State, and prominent in politics, and your humble servant has fooled around politics a little himself and so had Brother Barry. So that when we found that being a plain horticulturist did not quite fill the bill, we thought a little politics would not hurt, and so we went to see certain persons who had the capability of making pot hooks on paper, as our young friend is doing before me now, and we informed them that this committee of three would give us an audience at three o'clock that afternoon. So when we went to the building that afternoon, I noticed, if no one else did, that there were eight or ten bright looking young fellows not very

far in our wake, and we went up on the elevator three or four, or sixteen stories, I don't know which (and sometimes I think that some of the Chicago people live nearer that other world than they will get soon again), into that large building. How be it, we met President Davis, and upon meeting him he very cordially recognized us and said that Mr. Higgenbottom would be in in a few moments and hear our complaint. In a few minutes he came, dressed as we understand Mr. Maxwell, his appointee, dressed every day, and with his silk hat upon his arm he came into the room and Mr. Davis introduced us, stating that we came there to protest against the appointment of Mr. Maxwell. That was true, but we did not care about him saying it in that way. Mr. Higgenbottom managed to squat upon the arm of a large chair, but his other two conferees did not honor us with their presence. The door in the next room was slightly ajar. Mr. Higgenbottom rested upon the arm of his chair with his silk hat in hand, while Mr. Barry, in his able and seductive manner, proceeded to address him—and he did it well—with some very choice language, with regard to the unfitness of the appointment of any such man as Maxwell, to represent the horticulturists of the United States. When Mr. Barry finished, Mr. Higgenbottom arose from his chair as though he intended to go out, but Captain Watrous said to him that the gentleman from Ohio would like to address his honor a little bit, and so he managed to squat again upon the arm of the chair and your humble servant gave him the best an Ohio man has “in the shop” for about fifteen minutes, and I can assure you it was the oddest position a man was ever put into, to address a man upon a committee who had the almost entire control of this matter in his hands, knowing that our speeches had no more effect on him than water on a duck's back.

Mr. Higgenbottom covered his head with his silk hat at the end of my address and did not wait for Captain Watrous, but “lit out” and said to us: “I will think of this matter.” He had hardly gone when Mr. Bickham, the son of the editor of a Dayton paper, who is in the newspaper business in Chicago, came to us and said: “Boys, you did it well.” These pencil shovers had taken down every word of our speeches, and they further said to us: “Boys, if there is any thing that you have forgotten, or if there is any new thing you intended to say further, tell it to us, and we will put it down and print it.” Mr. Higgenbottom went off in his innocence without ever knowing that the boys were there, but you ought to have seen these speeches in the eight leading papers of Chicago the next morning. When that board met at three o'clock the next day, with these fiery speeches still impressed upon their minds, Mr. Higgenbottom with all his ability succeeded in getting only eight votes out of the thirty-three for his saloon keeper. Now, we had not any compunctions of conscience about that. It was a plain matter of business, and we found that we had not any chance to urge the case through Higgenbottom, and being somewhat of newspaper men ourselves, we took another plan for it. So Mr. Samuels was appointed. While I have no personal acquaintance with him, I know him to be a prominent nurseryman of Kentucky, and in full sympathy with the horticultural interests of the Central States, and while we all, all over the United States, will be glad to see the citrous fruits of Florida and California, and a few of their vinous products exhibited at that exposition, we want a show for the apple and the pear, and we think now that we have an opportunity, to make the vast horticultural product of the Central States a prominent feature in the great Columbian Exposition.

With this full statement, in order that you may know how we got along with this matter, I ought to say merely in continuation, that it now becomes our duty as a State Society to do every thing in our power for that exposition, and show the people of the United States what Ohio can produce. Ohio occupies a central position in the horticultural world, as well as in the topography of the United States, and we should have an exhibit there that will do honor to the State and show what she is capable of in the horticultural line. The northern part of the State upon the lake can vie with the hills of Southern Ohio in this exposition. The State all over will be able to show its substantial, every day, paying varieties of apples, pears, peaches and plums, not to speak of the smaller fruits which will come at the proper season. With this opportunity we can go ahead and work with all our might to the end that Ohio's share in that exposition

will not be injured by any management of any committee in the interest of any section of the country, and that we will have an honest show, and Ohio will stand second to no State in the broad expanse of our great land. This being true I say that it is the duty of every one of us to think about it and to get ready for it and learn the best means of preserving our fruit from the ravages of insects by the use of insecticides and fungicides (we learned from our Secretary to-day that Ohio is in the very front rank in regard to these matters), and all steps that may be necessary should be taken, and such an amount appropriated as will justify our friends in making their exhibits of horticultural products at that exposition in the best possible shape and form. We have a number of prominent citizens in this State who have been appointed by the Governor of the State to look after the different departments, and if there is not a sufficient number in the horticultural line, I hope that there may be appointments yet made, possibly at the recommendation of this society, and we hope that they will be such appointments as will be in sympathy and in "touch" with the very front rank of horticulture, so that when we come there we will have an exhibit that we may well be proud of. [Applause.]

Mr. Moore, of Muskingum county, said that his county would do her share in making the horticultural exhibit a success at the Columbian Exposition.

Mr. Trowbridge said that he recently met the Secretary of the Board of Agriculture, who informed him that matters in relation to exhibits of horticultural products were in a chaotic state; that one hundred thousand dollars had been appropriated, and that thirty thousand dollars of the same would be required for buildings.

Mr. Ford: I would like to have Mr. Whitney say something on the Crandall currant.

Mr. Whitney: I was at Mr. Ford's place and he had some Crandall currants, and as to the bearing quality of these, I can say, as I said before, that it was simply wonderful. It is a wonder that so much fruit could be produced on the bush. You have all seen the photograph and it is about the same thing. I have some of the plants growing but I do not know that I will have such good results as I saw there. What I saw on his ground was nothing but favorable, and extremely so. His two or three rows were planted in an unfavorable condition, as the ground was as hard as the pavement almost, and were grown so close together that cultivation was out of the question. The size of the fruit was all that could be asked. I have heard some complaint that the fruit was not of an even size and that is somewhat true.

Mr. Albaugh: I have not been favored with any remarkable crop of fruit from my Crandall, but I am not sure that I have the real Crandall. These I have are nearly as large as a gooseberry. I think mine are not genuine but are mixed with something else.

Mr. N. H. Albaugh said that any plant coming from that bewhiskered and sockless State of Kansas should be looked on with suspicion.

Secretary Farnsworth: I would like to inquire if anybody has fruited the North Star currant?

Mr. Albaugh said that they were planting it but had not as yet fruited it; that the President of the National Association had spoken very highly of it.

President Campbell: I would like to hear from the Society as to the quality of the Fay currant—not as to the size, but as to the taste of them.

Secretary Farnsworth: I can not grow enough of them to get a taste.

Mr. Albaugh: We never had enough of them to make a pie. In some parts of the country they get large returns from this currant.

Mr. Hunt said that his neighbors had them and he thought they were all they were represented to be.

President Campbell: I have grown the Fay currant ever since it was first introduced, and I find it a rather slow grower, and to my taste it is very inferior in quality; the worst I have ever grown.

Mr. Albaugh said that currants were raised for sale and not for flavor, but he was not aware that the Fay was lacking in flavor as compared with other currants. He said that the Wilder was a fine grower and very productive of good berries, not quite so large as the Fay, and if confined to a single variety he would prefer the Wilder.

Secretary Farnsworth said that he found the Victoria the most profitable of currants.

Mr. Ford said that he had grown the Wilder for several years and found it an excellent currant and the best he knew of in the way of a red currant.

And thereupon an adjournment was had until Thursday morning at nine o'clock.

THURSDAY MORNING, *December 10, 1891.*

Mr. B. F. Albaugh read the ad interim report from his county as follows:

AD INTERIM REPORT FROM MIAMI COUNTY.

BY B. F. ALBAUGH.

The season of 1891 was in western Central Ohio neither remarkable for great productiveness nor marked failures. There were moderate crops of fruits of most varieties with the possible exception of grapes, which were destroyed by heavy frosts about 17th of May.

On my grounds the Niagara, Woodruff Red and Ives seemed to escape better than other varieties. This may have been owing in part to difference in location and exposure.

Niagara is growing in favor. Its quality is much improved by hanging on vines after beginning to ripen, while many other kinds are sure to deteriorate rapidly. This

is notably true of Moore's Early, Early Victor and Hartford. Woodruff Red maintains its popularity. The Eaton seems to be of poor quality. The bunches are small and lack compactness. Grapes were very little affected by either rot or mildew.

A few have sprayed with fungicides with seeming good results. In this connection I wish to report the result of spraying gooseberry bushes with Bordeaux mixture. The mildew began on one side of a patch of about four hundred plants and had progressed about one-third of the way over the lot when first discovered. The entire patch was immediately treated, with the result of effectually checking the further spread of the disease. The effect seemed almost magical, and was plainly discernible for weeks afterward.

A small amount of Paris green was added, which destroyed the currant worm completely. The bushes were treated twice.

Currants and gooseberries were a full crop and brought fair prices. Fay's Prolific continues to prove satisfactory in all respects except in point of growth of bushes. Wilder is a much stronger grower, is very productive and of good quality, and all things considered seems to be the coming currant.

The Downing gooseberry seems to be the favorite of growers.

Cherries were the exception to general rule and bore an immense crop. The failure of this fruit in other parts of the State gave us a good market and the fruit sold at fair prices. Not less than 5,000 bushels were shipped from our village railroad station. The prices ranged from \$1.00 to \$2.50 per bushel.

Early May and Montmorency are almost the only varieties grown. The Biggareaus and Hearts rotted badly before fully ripe and were a total loss.

Pears did moderately well. Duchess, Flemish Beauty and Lawrence seem most popular. There is less complaint of fire blight than usual.

Plums did unusually well, but the acreage of bearing trees is very small. There were a few cases of black-knot reported. This disease has not heretofore appeared in our part of the State. Lombard appears to lead all other varieties. American varieties seem more liable to injury while in bloom by frosts. The Robinson seems especially liable to injury in this way.

Our part of the State is not considered well adapted to peach growing, though trees are planted to considerable extent, hoping often against hope for favorable seasons. The two or three favorable seasons in recent years have induced much larger planting than heretofore. By selection of the hardier varieties it is hoped that better success may be attained.

Apples are the principal fruit crop of western Ohio, but the low prices of past years have caused growers to neglect their orchards and the recent plantings have not yet come into bearing. The almost total destruction of our orchards by freezing during the winter of 1880-81, still makes an unfavorable showing in the dilapidated appearance of our old orchards. Ben Davis, notwithstanding its low quality, is maintaining its popularity as a market fruit. Western Beauty and Wealthy have fruited for us and give much satisfaction. The same may be said of Grimes' Golden.

Small fruits continue to receive much attention. Almost every farm is now supplied with this indispensable luxury. In this respect is plainly discernible the educating influences of State and local horticultural organizations.

With high culture, and selection of suitable soils, better results are being secured and a multitude of owners of small areas of land are able to make a comfortable living where grain growing at a profit would be totally impracticable.

In strawberries, Bubach, Crescent and Haverland seem to lead. A good, productive, staminate variety of early ripening seems wanting.

Raspberry culture seems on the decline. The acreage at any rate is much reduced. The ravages of disease and destruction by attacks of insects and decline in prices of recent

years may account for this condition. Gregg has not yet been superseded. Hansell, amongst the reds, grows in favor. It must have high cultivation to insure success.

Snyder blackberry holds its old place in the lead as a market variety. Early Harvest has done so well of late years that it is being planted pretty largely, though known to be rather tender. Stone's Hardy is being abandoned, as is also Taylor's Prolific. Erie, though not very hardy, continues to grow in popularity. There is room for the ideal blackberry, viz.: One which combines hardness of Snyder, quality of Taylor and size of Lawton.

Mr. Aldrich: At our last meeting, at the request of Mr. Irwin, there was a resolution passed requesting the legislature to pass a law providing for the destruction of trees affected by black knot. There was a bill of that kind presented to the legislature a little late in the session and it was referred to the committee and that was the last we heard of it. I would like to have that resolution renewed this year, as I think some steps should be taken to destroy these trees. I therefore move that the resolution of last year on this subject be readopted.

The motion was seconded and carried by the unanimous vote of the Society.

Mr. Albaugh said that the bill presented was similar to the law in relation to the destruction of the Canada thistle, and its passage would be urged at this session of the legislature.

Mr. Ohmer said that the bill would be worth but little if it was similar to the Canada thistle law, because it would not be enforced.

Mr. Albaugh said that the defect in the thistle law would be remedied in the proposed bill.

Mr. Hunt said that he did not destroy the tree affected with black knot, but simply cut off the knot.

President Campbell: I believe the only safe way is to destroy the tree as there is no such thing as curing black knot.

A Member: When would you advise the cutting down of the tree?

Mr. Albaugh: Cut it down when there is no more salvation for it.

Mr. Bilderback: About nine years ago I discovered a black knot on a sour cherry and I went to work and I cut off every thing I could find; and the next year I followed up the same process and burned what I cut off, and after the third year I did not discover any thing of the kind.

Mr. Bitzer: I have a tree which I planted some 15 years ago, and shortly after it was planted it got full of knots and as quick as I discovered the knots I cut them off and burned them up, and I followed that for about three years, and there has not been a black knot on the tree since.

Mr. Aultfather: I would like to ask if there are varieties that are productive that black knot does not affect?

Mr. Albaugh: I think not; there are some varieties that are less liable to black knot than others. The Damson seems to be the most liable to black knot. I don't find as much trouble with the Bradshaw and Lombard as I do with the Damson.

Mr. Frank Ford then read a paper entitled *The Perfect Potato*, as follows:

THE PERFECT POTATO.

BY FRANK FORD, OF RAVENNA.

When I received the program for this meeting from the Secretary and found that I was announced for "The Perfect Potato," it looked not a little as though he was in a joking mood, knowing that for many years I had been experimenting with potatoes. Had he given the subject "The Ideal Potato," as I had promised to say something about, it would have been an easy matter to set up an "Ideal," as ideals have, as a general thing, but very little foundation in fact, but perfection is found, if found at all, only where it has a solid base to rest upon. Therefore, an ideal of perfection and perfection attained, are very different, although it is usually taken for granted that every thing was created perfect, and possibly perfection did exist in the beginning. But if so we seldom if ever find it in the vegetable kingdom. This was forcibly brought to mind when one of our men was getting up our exhibit of potatoes for this meeting, who said "he had never dreamed that it was so difficult to find perfect specimens among such large lots of fine looking potatoes." Scarcely a tuber can be found that the ideal would not reject even for its form. I will attempt to set up an ideal potato and then examine it to see how near we can approach it in reality. The first and most important point of an ideal potato is quality. It must cook quickly, evenly and mealy or dry, and yet not readily burst open and fall in pieces, losing a large portion of the starch. It must be of pure flavor, free from the rank or earthy taste we find in many varieties, otherwise almost perfect. The form must be of the best, an elongated oval with the cross section oval, which is the best form for cooking as well as the most pleasing in appearance; few eyes and these even with the surface, making it smooth and handsome. The tubers must grow to a uniform size and shape, and since we hear of yields of potatoes ranging any where up to over 1,200 bushels, my ideal potato must not yield, with good cultivation, less than from 200 to 400 bushels per acre. To do this it must be of a strong, vigorous growth, able to withstand wet and drouth, not subject to blight, hence free from rot.

The tubers must be good keepers remaining in good edible condition until new potatoes come again. I do not have reference to the poor things we get from the south early in the season, good enough when the farmer digs them, but spoiled by contact with the atmosphere while still immature, but rather to perfectly developed tubers from our own gardens. As to color, it matters little so it is pleasing to the eye; neither would my ideal reject varieties in which there were streaks of red in the flesh even if it did not cook entirely white, as we often find this combined with the very finest quality, and yet most epicures would choose one that cooked pure white. Has perfection been attained in the potato? Can it be found in any variety? I certainly think not. As a rule we find that those varieties that are of the purest flavor are usually only moderate yielders, more subject to blight and rot, more influenced by wet and drouth, while those of great productiveness as a general thing are of poor or only passable quality. In the past twenty-five years I have grown several hundred, perhaps a thousand varieties, and not one of them am I able to say are perfect in all respects. It will doubtless be expected that I am to tell you which of all the kinds now in cultivation is "The Perfect Potato." This I can not do, but will name a few which to my mind are the nearest approach to perfection.

First, Brownell's Winner. It is very productive, large size, fine form, smooth, of the very best quality and holds its good quality until new potatoes of the same variety are ready to use. We had them to use in August the past summer, the last of them the equal of any new potato. "The Dandy" is a dandy sure. Is just about as good in all points except it is not of as uniform size and shape. This is a white potato while the Winner is red. Halo, of Dakota, is one of the best in nearly all points, yet it is a little too rough.

Early varieties are usually of better quality than late kinds, but not as a rule as productive. Among the early varieties there are none that more nearly approach my ideal than Lee's Favorite, one of the largest yielders compared with all early and late varieties. At the N. Y. Experiment Station it has stood highest of all early kinds but one and that was E. Rose. At the Ohio Experiment station one year it exceeded in yield by 60 bushels per acre more marketable tubers than any other early variety, and 17 bushels more than any late variety. It is of the purest flavor, fine form and color. Why not perfect? It is not as good a keeper as many other varieties. As it is extremely early, it is very difficult to keep it from sprouting early in the spring, hence it loses its good cooking qualities, although it never rots. Tonhocks and New Queen are splendid early varieties, also Paris Rose, a new variety which will make its mark. It was one of the very best at the Ohio Experiment Station the past season.

There has been a vast improvement in the potato in the past few years. Many new varieties are being grown from seed and introduced, some of which are found superior and have displaced old varieties. The various Experiment Stations, we are glad to see, are in a measure a check to the introduction of varieties of little or no comparative value, not only of potatoes, but all horticultural products, and as time moves on this influence will increase. I believe the time is not far distant when it will be a difficult matter to introduce any thing new that has not the indorsement of some one or more of the Experiment Stations. The potatoes I have mentioned are not those that I would plant for ordinary market purposes, but would take the coarser growing kinds which are larger yielders. If I were looking for a potato to produce the largest crops it would be one not very far removed from the seed, if for fine quality not so near. As a rule the nearer the seed the greater the yield, and as the productiveness decreases the quality improves, although I have never discovered improvement enough to make a really good potato out of a very poor one.

There is one matter that I wish to mention, although not wholly pertaining to the perfect potato. The time of planting has more to do with regard to a large yield than any other thing connected with growing potatoes. If we could only foretell the weather for about three months or so, we would know just when to plant. There is a very critical time in the growth of the potato and that is at the time the tubers are beginning to form. If it is very dry at that time, no matter what may follow, there is no use in counting on a large crop, as it certainly will not materialize. Thanking you for listening to my rambling paper, I will now tell you where to find the Perfect Potato and no where else—*In the Seedsmen's Catalogues.*

Professor Lazenby then read a paper entitled "The Perfect Apple," as follows:

THE PERFECT OR IDEAL APPLE.

PROFESSOR W. R. LAZENBY.

What the wheat is among cereals, the potato among garden esculents, such is the apple among the fruits of the temperate zone. It is truly world renowned. The early history of the apple is veiled in that obscurity that belongs to all fruit and vegetables that were cultivated before any authentic records were kept.

We also meet another difficulty in tracing the early history of the apple, and that is the uncertainty of the languages respecting it. For example, the word "apple" as used in the Bible and by the old Greek and Roman writers could not have referred to the fruit that now bears the name.

In fact, apple appears to have been used very much as the word "corn" still is in some European countries. That is, in a general sense, meaning all cereal grain; so the word apple was probably applied to various round fruit.

Despite this difficulty we are reasonably sure that the cultivated apple as we know it to-day, had its origin in the common wilding or crab, a species found in southern Europe and western Asia. That the species has marvelously improved under culture, and has produced many distinct varieties, can not be questioned. It seemed to be one of the first species genus *Pyrus*, that showed a marked tendency to vary, and has in many instances widely departed from the normal type.

But it is not with the history of the apple that I am at present to deal. Whatever this may be we know that the apple to-day ranks among the most reliable of our cultivated fruits—the one most indispensable, the one most necessary to our well-being and comfort.

For several years I have been more or less interested in making a comparative study of the different varieties of apples. Although this is one of our best known fruits it has received comparatively little scientific attention.

Something has been done in the way of determining synonymy of varieties and a very little in the way of classification, but even here only a beginning has been made.

What is needed is a better knowledge of the general characteristics and tendencies of the numerous varieties now in existence, that we may know how to improve them or at least how to prevent their deterioration. We need a more careful comparison of varieties, a better knowledge of the good and bad qualities of each, so that they may be graded with some degree of fairness and confidence. If it is important to grade the fruit of a single variety raised for market, how much more important that we judiciously grade the varieties; for the former is of a single season, the latter extends over more than an average lifetime.

Again; the difference between the highest rank of marketable fruit and that which can be sold at all, is slight, compared with the most profitable variety and one that is nearly worthless.

We believe that our numerous varieties of the apple can best be studied not by planting a few specimen trees of each in one locality and comparing the results, but rather by utilizing the experience of specialists in apple culture in all parts of the country. This will involve some labor and some expense. It can only be accomplished in full measure by an extended correspondence with, and numerous personal visits to, the principal apple growers in the United States. Much can be done, however, by the careful study of the reports of our best horticultural societies and experiment stations, as well as our standard horticultural books and papers.

As a rule, the results set forth in these should not be thoughtlessly accepted, but carefully considered, discussed and criticised. It should be distinctly understood that the success or failure of tests or experiments in any particular instance can be no safe guide to others unless the conditions are precisely the same.

In our country with its diversified soil and climate, with its marked variation of topography and exposure, the conditions are seldom exactly alike, and the apple culturist as much as any one else needs to "prove all things" and to "hold fast to that which is good." The "holding" part is not so difficult, but the "proving." How shall it be done? It is difficult to actually prove a few things; how shall we "prove all things?" The best proof of the things we really desire to know is the universal judgment concerning it, or rather the consensus of expert opinion relating to it.

With apples, as with other fruit, it is futile to expect all of the ideal virtues in any

single variety. And yet a variety, to have any value must have a certain proportion of the sum total of these virtues or requisites of a perfect fruit. It may fall very far below the ideal standard in some qualities, but it must stand equally high in some others. In other words, a variety of apple may be valuable if some good qualities are absent, provided others that are present are well marked.

It is a popular belief that a variety of apple that does well in one locality may absolutely fail in another. A close study of the facts will not warrant this assumption. The rule is (with exceptions, of course), that a variety which presents marked variations in different soils and climates, is likely to present considerable variations in the same soil and climate. If its good characteristics are not marked enough and reliable enough to withstand reasonable changes of condition incident to change of locality, they are not well enough marked to withstand the changes of one locality. In other words, a variety that is variable in different localities will soon show variation in the locality where it does the best. Good or bad characteristics are alike inherent, and not determined by environment. It is true that conditions may emphasize or minimize certain characteristics, but it can not obliterate or radically change them. A variety of apple that lacks productiveness, or hardiness, or keeping qualities, under what might be termed average conditions, may show some improvement, but it will never take high rank in these qualities, under the most favorable conditions.

Speaking with reference to the apple alone, the question of sectional adaptability has in my judgment little significance. Certain restricted localities may now have, and may continue for a long time to have favorite varieties not highly regarded elsewhere; but sooner or later some of these will be discarded, and that variety that succeeds well over a wide area will be found to be the most uniformly and continuously successful in restricted localities. Let me illustrate: The King of Tompkins, which from its name is generally supposed to have originated in Tompkins county, N. Y., but which really did originate in Warren county, N. J., was early introduced to the county whose name it has long borne, and for a time did remarkably well. The young trees were extremely thrifty and vigorous; the early crops were abundant; the fruit almost unsurpassed in richness and flavor. For a time it seemed to fulfill the most sanguine expectations, and the Tompkins County Farmers' Club for a number of years confidently placed it at the head of the list, as the most profitable variety to cultivate in Tompkins county. Although reports much less favorable were given from other localities, the King was in great demand, and thousands of trees were planted.

Years passed, and the fruit growers of Tompkins county, although slow to acknowledge the fact, were compelled to admit that the King was not as reliable as they had supposed. The trees had borne a few good crops, and the apples had sold at good prices, but taking a term of years, it was found that the King had yielded no such returns as the Twenty-ounce, the Baldwin Roxbury Russett, the Rhode Island Greening, Smith's Cider, Peck's Pleasant, or even the Northern Spy. The trees had not sustained their youthful reputation for vigor, and the promise of continued productiveness was not realized.

I never heard of a locality where the King was considered more at home than in Tompkins county, yet even there it is a comparative failure as a profitable market apple.

On the other hand, few varieties of the apple are more widely disseminated than the Newtown Pippin, and few have more generally or fully sustained their reputation for quality and a fair degree of productiveness. For years it has stood at the head of the list of dessert apples, combining richness, flavor and long keeping qualities to an unusual degree. The qualities of vigor and productiveness have been less marked—these depending largely upon the fertility of soil and good care, without which this variety is almost certain to fail. Correspondence from the New England, Middle and Western States, with competent authority, show that when the same treatment is awarded this variety, treatment that has always been claimed necessary, even where it originated, it

showed little or no signs of deterioration. Even from the new State of Washington—the Pacific Northwest—comes this report: "The Newtown Pippin possesses the qualities of an ideal apple for Washington, with the exception of a slight deficiency in productiveness and in color. Even in regard to productiveness it may be said to be satisfactory, except in the extreme western portion of the State. It does remarkably well in the Yokima and Walla Walla districts."

But what do we mean by a perfect apple? One that meets the highest demands of the times. What are the essentials or requisites that make perfection in this fruit? The special points at present in demand in apples, and those which give a variety value, are as follows:

(1.) Richness and flavor; productiveness; long keeping qualities; attractive color; fruit adherent to tree, with short stem; regularity in size and shape; small core and few seeds; even maturity; smooth, thin skin, but sufficiently firm to prevent easy bruising together with vigor, health, hardiness and longevity of tree. The perfect apple for our time would probably conform to the following scale: Richness and flavor, 20; productiveness, 20; long keeping qualities, 15; adherent fruit, 10; color, 10; even maturity, 10; regularity in size and shape, 5; small core and seeds, 5; good skin, 5.

The most important of the above named requisites are the first two. It is hard to say which stands first, for with productiveness goes health, hardiness and longevity of tree, while quality includes all that makes a fruit valuable as a food.

If an apple is not edible, or in other words is zero in quality, productiveness counts for nothing. If, on the other hand, an apple has the finest quality, and yet only a few specimens are produced the quality counts for nothing practically. We therefore mark these two attributes the highest, because most essential.

Whether we should choose a high grade in quality, with a lower grade of productiveness, or a high grade of productiveness, with a lower grade of quality, will depend entirely upon circumstances. For example, in some localities in Ohio the Ben Davis would rank according to the scale given here 15 in productiveness, but only 5 in quality. The King of Tompkins would rank 15 in quality, and only 5 in productiveness. On these two counts alone these varieties would average the same, but their value might be quite different, depending upon their rank in other qualities and the demands of the market.

That keeping qualities rank next to edible qualities and productiveness can scarcely be questioned, and yet, it is possible to have a variety of considerable value that would rank nearly zero in this respect. We can not, therefore, give this requisite of a perfect apple so high a valuation as the two just considered. Instead of 20 we make it 15.

Adherence of fruit and color are two important requisites which we rank of equal value, viz.: 10 points each. Some growers would undoubtedly place an attractive color first; others would say good hanging qualities, or a firm adherence to the tree was of the greater importance. There are wide variations in both of these essentials in our standard varieties. Under the head of adhesion could properly come a discussion of the character of the stem. This should be as short as possible so as not to interfere with firm adherence to the tree. A long stem is often broken, which gives it a ragged appearance, and such a stem is more liable to bruise the apple in close packing. The market value of color I need not discuss.

The loss from a lack of evenness in maturity in some varieties of apples is very great. All of the apples of winter varieties are picked at practically the same time. This is often too early and perhaps more often too late. Even when the best possible date is selected some of the specimens will be so mature that they speedily decay, while others will be so immature that they are insipid, tasteless and not infrequently present a shriveled appearance.

To the remaining three essentials, viz.: Regularity in size and shape, small core and few seeds, and good skin, I have given 5 points each.

Under the head of regularity in size and shape the question of the best size and

most desirable shape would naturally arise. It might be thought at first that the size or shape itself was more important than regularity. A moment's reflection will show that this is not so. Size and shape must vary within certain limits to meet the varying demands of the market. Irregularity, however, is not demanded. It is true it can be partially corrected by grading, but this is more or less expensive, is sometimes entirely neglected and when attempted is usually imperfectly done.

We may say in general that the best weight for apples is from six to nine ounces, and the best shape roundish or globular. That is, the two diameters, axial and transverse, should be nearly equal.

The importance of a small core and few seeds need scarcely be dwelt upon. The seeds especially should be lessened as much as possible, if not entirely eliminated in a perfect apple. They are of no use, and while they may be less objectionable than the seeds in the grape and in some other fruits, they make heavy and useless draft upon the vitality of tree and soil. Every pound of apple seed produced takes from the soil almost one hundred times as much of the essential fertilizing elements, viz.: Potash, phosphoric acid and nitrogen, as does the same amount of the flesh of the apple. In other words one pound of apple seeds is as exhaustive as one hundred pounds of apples without seed. If, as is claimed by many, the crying abuse and one principal cause of failure in apple culture, is starving the trees. This is a point worthy of attention.

But I am making this paper too long. I close with the hope that this imperfect study of the "Perfect Apple" may suggest to other and abler observers some useful lines of inquiry.

Mr. Albaugh: I was in hopes that the professor would designate by name the apple that was going to fill the ideal of his mind so that your humble servant with others could hustle for some of the trees, but he leaves us fellows to hunt for that apple which he so beautifully and accurately describes.

President Campbell: I hoped he would say that that apple was to be found in the Seedsmen's Catalogue.

Mr. Pierce: The Newtown Pippin is not generally a successful apple, but there are one or two places in this country where it is successful.

Mr. Aldrich: It seems to me there might be two things considered. If a man is going into a new country he should select the apple that is most likely to succeed in that country, but if the apple has been tried there he should select the apple that does best in that community.

Mr. Albaugh said that the history of the Ben Davis apple would substantiate the paper of Professor Lazenby; he said that the Ben Davis apple would succeed almost anywhere in this country; that it was a universal success.

Mr. Ford said that there was no apple in his opinion that would do well over a large range of country.

Mr. Albaugh: I always had an idea that the large apple was, per se, the most desirable apple, but I found that my opinion did not hold good in all cases. This fall I was in Cincinnati and I naturally gravitated to the commission houses and I stopped at Mr. Smith's house on Front street and looked over his stock, and I spoke to him in regard to the

salable qualities of the different varieties, and he said the leading variety was the Ben Davis and the next was the Rome Beauty. I turned to a barrel of Tulpehockens and I said "What is the matter with them?" and he says the size is too large; he says we sell apples largely to retail dealers and consumers by the barrel, and a man having children attending school, each of them taking an apple, it would not take long to use up a barrel of large apples; so they preferred a medium sized apple.

Secretary Farnsworth: We have heard a great deal about the apple to sell in the market; now I would like to hear something about the best apple to eat and sell to our neighbors. I would like to inquire about the Hubbardston—if it is sufficiently productive. I have but one tree, and I think the quality is fine and the color is good, and it is uniform in size and a good size and rather a good keeper; it is possibly one of the good things we are overlooking.

Mr. Pierce said that the Ben Davis was not a success in his locality.

Mr. Albaugh: We count the Hubbardston Nonesuch one of the very best apples in our country; it is uniform in size, of good flavor, a good bearer, and the tree is reasonably hardy. It is one of the most salable apples we have and a good keeper.

Mr. Whitney: We have grown the Hubbardston Nonesuch for thirty years, and its bearing qualities are as good as any we grow, and we have always considered it one of the best winter apples for eating. We also regard Peck's Pleasant as a good apple.

Secretary Farnsworth: Is Peck's Pleasant hardy with you?

Mr. Duell: I claim it is one of the best and most profitable apples in our orchard, in quality, quantity and hardiness.

Mr. Hurst: I have heard that variety is the spice of life. I planted until I got about 125 varieties, and I am asked almost every week what I would plant if I was planting again, and I tell them that I don't know any more about it now than I did at first, and if I was going to plant again I would do it in about the same way again. Then I would be sure to hit it at some time with some variety; I don't believe in being bound up to a few varieties.

Frank Ford, of Ravenna, exhibited a limb of a tree cut from the orchard of Mr. Samuel Alvord, of Mantua, bearing apples that were Roxberry Russets, and others far removed in appearance, with a smooth green skin on alternate spurs, four of which bore Russets and three green apples, and a feature that renders this still more curious is the fact that the apples were entirely unlike in texture and flavor.

President Campbell then appointed Messrs. Green, Tracy and Tussing as a committee to examine and report on the vegetables exhibited by members of the Society.

President Campbell: The next thing in order is a paper entitled *The Perfect Pear*, by Mr. Ohmer.

Mr. Ohmer: It has been my custom heretofore to faithfully perform whatever work has been assigned me. The Secretary has asked me to write a paper on *The Perfect Pear*, but sickness in my family and the uncertainty of my being here prevented me from undertaking that task, so that I am for once short. I will, however, make a few remarks on the pear. I have been an extensive pear grower for thirty years, and I have planted some four thousand trees of many varieties, and out of that number but few of the varieties are profitable. Were I to plant now, I would confine myself to a few varieties and they would be principally fall and winter varieties. I was surprised to learn yesterday from an ad interim report that there was a scarcity of pears so near Dayton, and that they sold for fabulous prices as compared with the prices at which we sold our pears. There was a time when I got two and three dollars a bushel for Bartlett's. In my experience I found the more pears I had of that variety the easier it was to sell them. I could dispose of one thousand bushels easier than I could ten bushels, for when I had a large quantity the purchaser came to hunt me up and bought them in the orchard. This year pears were so abundant in Montgomery county that we were glad to get fifty cents a bushel for nice Bartlett pears. The small pears we let rot on the ground. If I were to plant pears for profit, or for the table, or for eating, I would plant the Lawrence; it is a beautiful pear, excellent in quality and it never has failed to bear from the first except last year, and the leaves hang on until the frost comes. There is no other pear tree that holds its leaves as well as the Lawrence. There are localities where the Lawrence does not do well, but if I were planting a thousand trees now five hundred of them would be the Lawrence.

Mr. Miller: What would the other five hundred be?

Mr. Ohmer: In my part of the State I would plant a great many of the Keiffer. If I were planting one thousand trees I would plant some Bartlett's. In southwestern Ohio the Keiffer does well and it is a good pear to eat when ripened thoroughly on the tree. It is very productive and will always sell. I would plant certainly several hundred of the Keiffer.

Mr. Ford: Some of our best fruit growers pronounce it as good as the Bartlett for eating. They are not quite as large and are liable to overbear. I have never eaten as good canned pears of any other variety as the Keiffer pear.

Mr. Dean: I have succeeded with the Keiffer pear better than any ther, but it blights.

Mr. B. F. Albaugh: The Keiffer has a high commercial value and it is the best canning pear that I know of.

Mr. Clymer: Since the Keiffer pear has been mentioned, I will say from what little we have seen of them this season—we had a large quantity of them shipped to us in bulk and they came in green and about as hard as a stone; we found that they were unsalable at the time. After they were in the store about three weeks they colored up and we sold them at about three dollars a barrel. The pear was apparently ripe on the outside, but they were as hard as a stone on the inside. I don't remember of seeing one in the first car load that was fit to eat. They sold readily and were smooth and large, but I never remember selling two barrels to any one in the trade. I believe they are similar to the Ben Davis apple.

Mr. Albaugh: Undoubtedly these pears were not ripened before shipment, and they are not a fair specimen.

Secretary Farnsworth: There are a great many strong points connected with the Keiffer; it is a strong grower and a heavy bearer—too much so for its own good; those that I have grown without thinning were about the size of the Lawrence, but not so good in quality; we have found them very satisfactory for canning, but very poor for eating without cooking. On this account, a row of them next the road is a perfect safe guard for my other pears, as the boys get a taste of them and will not disturb the others. The Duchess with us is one of the most profitable dwarfs.

Mr. Aldrich: Have any of the members had any experience in growing the Boussock?

Secretary Farnsworth: It is being grown to some extent with us; it is a large, smooth, handsome pear of good quality, but not quite rich enough in flavor. One disadvantage is that it comes so near the time of other good pears.

Mr. Ford: This Boussock pear is a sour pear and there is considerable acid mixed with it, but it is a very good pear; it is real refreshing after eating a sweet pear. I have never lost a Boussock pear by blight.

Mr. Ohmer: After having heard the remarks of the gentleman from Cleveland who handles fruit there, I wish to say another word in favor of the Keiffer. Returning from St. Louis about four weeks ago the train boy passed by with fruit and I looked into his basket and his pears proved to be Keiffers, and I inquired what he asked for them and he said a nickel, and I took one and ate it and I found it a good pear—a delicious pear. I would plant the Keiffer were I to plant now and would expect to make them profitable because I know they are a good pear when

properly ripened. The idea of shipping pears as you do potatoes, in bulk, is wrong.

President Campbell: The first business for this afternoon will be the election of officers and I think we will have a new departure in the method of election. Formerly we had a nominating committee, but now we will vote for the officers by ballot without the intervention a nominating committee.

Mr. Albaugh: There has been wide spread dissatisfaction over the State on account of the manner of selecting the officers of this Society.

A recess was then taken until one o'clock, P. M.

AFTERNOON SESSION.

President Campbell: The first thing in order will be the selection of a President for this Society, and I would say that the best interests of this Society require that you elect some younger man than your present presiding officer.

On motion, it was decided that the regular business of the meeting might be proceeded with during the progress of the balloting for and counting of the votes for the election of the different officers to be elected.

President Campbell: There is a request that some one say something about the Fitzwater Pear; it is claimed that this is only the Lawrence.

Mr. Whitney: I had an excellent chance to compare it with the Lawrence, and I will say that if it is not the Lawrence, that it is so near like it that it is absolutely useless.

President Campbell: Another request was made that something be said of the Murdy Plum. I will say that I have seen specimens of it exhibited at fairs and it is a very beautiful plum and very desirable, but I am not sufficiently acquainted with Pond's Seedling to say that it is that variety as it is claimed.

Mr. Miller: Samples of this variety were sent to a neighbor of mine who grows Pond's Seedling and he compared it carefully, and he said he could discover no difference in the taste or appearance.

Mr. Albaugh: In regard to the Murdy Plum: The plum was discovered by one of our traveling salesmen and we took a number of horticulturists, prominent men, to see the plum while in bearing and they all seemed to think it was another new variety. I did not go to see the tree myself, but Mr. Murdy sent us about one hundred trees and about ten thousand buds, and while I can say that in the fruit there is quite a similarity between that and Pond's Seedling, in the growth of the tree they are quite dissimilar, and as a nurseryman I will say that it is not the

same variety. It does not matter so much whether the Ben Davis and the Rome Beauty are so near alike that it is difficult to distinguish them; they are entirely different apples.

President Campbell then read a paper as follows:

THE PERFECT GRAPE.

BY GEO. W. CAMPBELL, DELAWARE, OHIO.

I hardly know what idea our Secretary had in his mind when he asked me to prepare a paper upon "The Perfect Grape," but as it was something I had been trying to produce, through the agency of seedlings, crosses and hybrids, for more than thirty years, I consented to say something upon the subject from my point of view. A grape perfectly adapted to one locality, and suited to one person's taste, I think is a reasonable possibility. But the "perfect grape" to suit all tastes and all situations where grape growing is practicable does not at present exist, and probably will not while we are subjected to the varying influences of an everchanging climate. A grape that will be very nearly perfect in one season where the conditions of temperature, moisture and sunlight are favorable, and in the hands of a skillful grower, may under less favorable circumstances and with careless culture be very imperfect.

I presume we all have our ideas of what a perfect grape should be. Many persons say a well ripened Concord is good enough, and for them it would be the perfect grape—but many changes would be necessary to make the Concord a perfect grape for the practical vineyardist. For most localities the vine in hardship, growth, health of foliage and productiveness might stand for a model, and a *perfect vine* should be the first and most important requisite. Next, the fruit; the berries and clusters should be large and well formed, the latter neither too compact nor too loose or open; the skin should be thin but tenacious and not easily broken by handling or packing for shipment; the pulp should be slight and very tender, parting easily and perfectly from the seeds, which should be few and small; the berries should hang firmly to the stems, never falling prematurely or even after the clusters are gathered and overripe. Then, the flavor and quality should be pure, rich and sweet, with just enough of vinous acid to make it "perfect," and without any suspicion of coarseness or impurity; just the flavor which you all recognize as exactly suited to your individual tastes. Is this not a description of the "perfect grape?" After experimenting for many years I have no hesitation in saying that just such grapes as I have described have been and can be produced in unlimited quantities and in great variety, but so far as I know up to this time they have only been produced upon vines lacking in the hardness and vigor of constitution which are necessary for general cultivation in our climate.

I have during the present season had some seedling grapes sent me, said to have been grown from seeds of the Eumelan, which certainly were in flavor and quality very nearly perfect. And I have also had from Mr. Munson, of Texas, some very remarkable seedlings produced mostly from native varieties and crosses, showing great improvement, and warranting reasonable expectation that an approximation to the perfect grape may come from that source. One variety that he has named Brilliant, a cross of Delaware and Lindley, seems to be near enough to the perfect grape both in vine and fruit to satisfy a large majority of grape growers.

The Witt grape, named by our Society in 1885, seems the nearest approach to the "perfect grape," both in the character of the vine and the fruit, of any of the pure native varieties I have seen. The vine is hardy and foliage healthy, of the Concord type, and doubtless a seedling of that variety. I will quote from Prof. Wm. R. Lazenby, and say that after testing the Witt for several years, and fruiting it on my own grounds

I fully indorse his description. He says: "I have carefully examined the Witt grape and believe that few varieties present more of the essentials of a perfect grape. The clusters are large and compact, the individual berry of good size and firmly adherent; seeds small, skin thin, and the pulp melting and juicy. It promises to be one of the best of our white grapes." It is, however, difficult to propagate, and of rather slow growth while young. It bears early and abundantly in proportion to the size of the vine, and has the strength and vigor capable of carrying a good yield to maturity. If it were more easily propagated so that it could be rapidly produced and sold cheaply, I should regard it as the most valuable of the White Concord seedlings I have seen. It may be long in coming, but I believe that through skillful crossing and the growing seedlings from the best and hardiest varieties we now have, still further improvements will continually be made, and that very nearly perfect grapes, grown upon hardy and healthy vines, will be produced suited to the various grape growing sections of our country. We have now the vines that are perfect, or nearly so, and also the grapes.

I will name a few grapes that all cultivators will recognize as having many points which the perfect grape should have, and which would only require some slight changes or additions, to make them very nearly the ideal of perfection: Delaware, Catawba, Concord, Moore's Early, Worden, Brighton, Jefferson, Empire State, Niagara, Woodruff Red and Pocklington. Others might be named, but the above are generally known, and with a few faults removed, or good points added, all will see that they might be made nearly perfect. The Delaware would require only healthier foliage; the Catawba, earlier and more perfect ripening; the Concord, improved quality and more tenacious skin; Moore's Early and Worden, the same; Brighton, perfect blossoms and tendency to retain its flavor and good quality after maturity; Jefferson and Empire State, rather hardier vines, and ability to carry a full crop to perfect maturity; Niagara, a hardier vine and higher character of fruit; Woodruff Red and Pocklington, higher quality of fruit. I think all who have long grown these varieties will recognize that these changes, with fewer and smaller seeds, would make them approach very near to the perfect or ideal grape.

In my own long, continued experiments I have produced many varieties that seemed almost perfect; but there would always be something wanting or some fault developed that would apparently in some way impair their general usefulness, and as I had taken the stand that a grape to be worthy of introduction must be in some important respect superior to any other known, my efforts have been a series of comparative disappointments, though interesting and in some ways valuable, showing that the highest quality of the fine, exotic grapes could be transmitted to the seedlings of our hardiest natives. And, although more or less at the expense of the hardness of constitution of the native seedlings, the hybrids or crosses are many of them vastly more hardy and healthy in our climate than any of the foreign varieties. Recrossing our natives with these hybrids produces in many cases hardier vines and still retains the fine quality of the earlier crosses. As I have before said we have now both the vines and the grapes that are, separately, perfect, or very nearly so. Let us then, by continued and persistent efforts, bring the two together so that the perfect grapes are grown upon the perfect vines, and then, by the assistance of the modern remedies and appliances against the attacks of fungoid and insect pests, the question of "perfect grapes" under careful and intelligent culture will be practically settled.

Mr. Pierce: Is not this a matter that should come before the Executive Committee?

President Campbell: If there is no objection, it will be so referred.

The Committee on Resolutions, through its chairman, Mr. N. H. Albaugh, then offered the following resolutions in respect to the death of Leo Weltz, which were unanimously adopted:

LEO WELTZ—IN MEMORIAM.

One of the best known, most able and most genial members of the Ohio State Horticultural Society is not with us here to-day. A few days after the adjournment of our last annual meeting at Zanesville (where he was present, in apparently good health), Leo Weltz passed to the world beyond. Present for many years at all important meetings pertaining to agriculture, horticulture or forestry, in his county, State and nation, his genial face will be—as it is here to-day—sadly missed, and the loss of his wise counsels, wide-spread knowledge on these topics, and his firm friendship, will be well nigh inseparable.

Leo Weltz was born in Prussia, January 27, 1825. His father was Professor Frederick Weltz, a professor of botany, and subsequently in the employ of the government as a geologist. Mr. Weltz's grandfather was a native of England, and came to Prussia in the eighteenth century as a minister to the German court. Leo Weltz attended college at Osterwick and Magdeburg, and subsequently attended lectures on botany at the University of Heidelberg. While a student there he assisted in laying out the botanical garden of that institution of learning. Mr. Weltz made the study of landscape gardening a specialty, and subsequently studied in and graduated from the Government Botanical Gardens at Berlin.

He remained in government employ some years, and then went to Russia, accepting the position of head gardener to Alexander III, Czar of the Russias. He remained at the Russian court for several years, and was then recalled to Germany to serve the requisite five years in the army. He fought during the revolution of 1847, and received four medals for meritorious conduct on the field. Mr. Weltz was lieutenant of a company of infantry, and received one of the medals for capturing a battery of guns. This medal was placed upon his breast by the late Emperor William in person.

In 1851 Mr. Weltz came to America, and located first at Huntington, W. Va., where he remained one year. In 1852 he went to Cincinnati, and obtained a position as foreman of a nursery at Mt. Washington. Three years later he started a nursery for himself at the same place. In the meantime he laid out the grounds of Governor Salmon P. Chase, Gov. Dennison, George H. Pendleton and others.

In 1857 Mr. Weltz went to Wilmington, O., and started a nursery there in 1860. He soon became identified with the agricultural and horticultural societies of Southern Ohio and the State. In 1875 he was made a member of the State Board of Agriculture, which position he held almost continuously to the time of his death. In 1883 he was appointed by Governor Foster to fill an unexpired term in the State Board of Public Works.

Mr. Weltz was married in 1853, to Miss Swalenberger, a native of Bavaria. Seven sons were born of this union, six of whom are still living. Mrs. Weltz followed her husband to the silent land in May last, surviving him only a few months.

In 1885 Mr. Weltz was commissioned by President Cleveland to investigate the hardy trees and shrubs of Russia, with a view to introducing such varieties as would be suitable and beneficial in our climate. He was abroad several months, and made such thorough investigations as have added materially to our knowledge of hardy Russian fruits.

He was early identified with the Ohio State Horticultural Society; was in attendance at nearly all its meetings, was for many years Treasurer of the Society, and almost continuously a member of the ad interim committee, and held this place at the time of his death.

Such, in brief, are the salient points in the life of one of the most prominent and useful members of this Society, a life well worthy of all honor and esteem. May we emulate his virtues in all things, and strive to make ourselves, as he was, a member in the profession of Horticulture.

N. H. ALBAUGH,
O. W. ALDRICH,
W. R. LAZENBY,
Committee.

A paper entitled "Methods and Results of Spraying Fruit Trees," by Wm. Stahl, of Quincy, Ill., was then read by Secretary Farnsworth, as follows:

THE VIRTUE OF SPRAYING FRUIT TREES, PLANTS AND VINES.

BY WM. STAHL, QUINCY, ILL.

Of the compounds used in spraying fruit trees, vines, and shrubs to prevent the depredations of insects and fungi, it may be truly said that their cost is inconsiderable, their ingredients are simple and well known. In their preparation there is not necessarily the least danger, and compounding them, or using them when ready for use, is not beyond the intellectual capacity of the ordinary individual.

To demonstrate the correctness of this it will be necessary to consider briefly the composition and use of the three compounds most used in spraying; and this will also give the necessary information about spraying to some that may lack it. No person will have any considerable use, and few persons will have any use whatever, for any article or compound in spraying, other than the three compounds known as the London purple solution, the Bordeaux mixture, and the kerosene emulsion.

I form these mixtures as follows: For the London purple solution I take, say, one pound of London purple and mix it with sufficient water to make a paste. This paste is next stirred into a pail of water, which is allowed to stand over night. The contents of the pail are then strained through a fine sieve or a coarse cloth into 100 to 150 gallons of water, which makes the solution ready for use. I make the Bordeaux mixture by dissolving six pounds of copper sulphate (blue vitriol) in sixteen gallons of water. In another vessel I slack four pounds of fresh lime in six gallons of water. As soon as this is cooled, it is poured slowly into the copper solution and the two are thoroughly mixed by brisk stirring. This is the Bordeaux mixture ready for use.

The kerosene emulsion is made by dissolving, by boiling, one-half pound of hard soap in four pints of water. To this add a gallon of kerosene and agitate the mixture briskly until a stable mixture is formed. This agitation is best accomplished by using a force pump and pumping the mixture with force back into the vessel that contains it. Before using this is diluted with ten times its quantity of water.

Now as to cost: The London purple costs from 12 to 25 cents per pound, according to quantity. One pound is sufficient for enough solution to spray three acres of orchard. The London purple solution is used against the curculio of the plum, and the codling moth, canker worm and curculio of the apple. Apple trees should be sprayed twice—when the apples are the size of peas and again in a week or ten days. Plum trees should be sprayed three or four times, at intervals of a week or ten days, beginning as soon as the blossoms have fallen. To spray an orchard will cost, per spraying, for material and the labor of applying the mixture as well as of preparing it, from 15 to 25 cents per acre.

The copper sulphate will cost from 7 to 10 cents per pound, according to quantity, and the lime needed for the Bordeaux mixture will cost next to nothing. The materials in the Bordeaux mixture will cost from two to three cents per gallon. This mixture is used against the black rot and mildew of the grape, leaf blight of the pear and quince, blight or rot of potato, etc. To prevent leaf blight of the pear or quince, spray five times, beginning when the fruit is the size of peas and thereafter at intervals of 12 to 15 days. To prevent the rot of the grape, spray in the spring after the vineyard has been pruned and put in order but before vegetation starts; the second time ten days before the flowers open, again when they are opening, and thereafter at intervals of three weeks until the fruit begins to color. This cost, per spraying, of spraying a vineyard will not exceed, on the average, \$1.00 per acre.

Kerosene costs from 12 to 15 cents per gallon. In the kerosene emulsion only the best whale oil soap should be used; it will cost 15 cents per pound. A pound of the

soap and two gallons of kerosene will make thirty gallons of the emulsion ready for use—cost about one and one-half cents per gallon. The kerosene emulsion is used against all sap-sucking insects, such as hop lice, squash bugs, plant lice, chinch bugs, bark lice, leaf hoppers, aphids, etc.

One other item in the cost of spraying yet remains to be considered—the pump. There are some very low priced pumps being advertised, but use, or rather attempted use, of them shows that they are really very dear. No man can sell good spraying pumps for less figures than I shall presently name, and pay his bills. Whenever you buy a pump for a less figure you can not reasonably expect to get a good one—one that will do satisfactory work; and I know of no saving more extravagant, no economy more false than this of buying a spraying pump that will not spray. Such pumps have done more than all things else to retard the general practice of spraying, and therefore I feel justified in saying that such pumps are among the worst foes of the fruit grower. Perhaps for the person that has only a very few vines or trees to spray, the proper pump to get is a simple one that can be placed in a bucket. A good pump of this kind can be got for \$5 or \$6. Others should get for spraying vines or shrubs a knapsack sprayer, which will cost \$12 to \$15; and for spraying trees a barrel pump, which will cost about as much as a knapsack sprayer. Of course a tank-sprayer complete costs more—some cost as high as \$75, and are worth it.

We now know well what spraying will cost; we must next know something of the results accomplished by it, in order to be able to determine if it is advisable for us to make use of. I presume this intelligent body is familiar with the experimental work of the Department of Agriculture and of the State Experimental Stations. Our Department of Agriculture has experimented extensively for years in spraying and several State Experimental Stations have done thorough and good work in this direction. I believe that all these experiments have been favorable to spraying, indicating this method as the best to pursue in the warfare against insect pests and fungous diseases and demonstrating its efficacy and practicability and great profitability. At least the evidence from these experiments is overwhelmingly in favor of spraying. I think this experimental work of the Department of Agriculture and of the State Experimental Stations should be given great consideration; I attach to it much weight, and yet I consider even weightier the experience of practical fruit growers who have tested spraying in their practical work of fruit growing, whose experiments covered acres instead of feet, and who, having to pay for their tests out of their own pockets, would naturally more carefully consider the cost and be more conservative in their statements favorable to the practice of spraying. I have letters from more than one thousand fruit growers in this country that tested spraying the past year. Without exception the testimony of these practical men is highly favorable to spraying.

My own experience, which only my great modesty prevents my saying is as extensive as that of any person in the country, is altogether favorable to spraying. I first tried spraying eight years ago. I was then engaged extensively in raising and shipping fruits, as I am now. In 1883, I found it very hard to get grapes not rendered practically worthless by the black rot. In fact, the only grapes I found that year not severely affected with this disease were on the strip of sandy land between the bluffs and the river at Nauvoo, Ill.—for forty years the center of a great grape growing section. Those grapes brought me as high as two dollars per basket in the St. Paul and Minneapolis markets, and were so profitable to both the grower and myself that it was impossible for me to escape the conviction that a cure or preventive of black rot would be of almost incalculable benefit to the vineyardists of the country, and that it was certainly worth my while to make a decided effort to find a remedy. From the start I was impressed with spraying, and I sprayed with a large number of compounds, but without good results, until the season of 1888, when I first used the Bordeaux mixture. The results were such that the next year I used this mixture quite extensively in an experimental way. The results removed my last doubts and convinced quite a number of neighboring vintners, that we had at last the remedy we had so much desired. In 1890, I sprayed all my vineyard's

and quite a number of grape growers near Nauvoo also sprayed. Of the result, the Nauvoo Rustler, the local paper, said :

"Mr. Stahl has been keenly alive to all matters that affects the business of grape growing, and with a view of promoting his own and the interests of our vintners, he has made a complete and exhaustive investigation of spraying. . . . While last year was not a good test season, this summer has been one that satisfies all as to the virtue of spraying, as those who did not spray this season have lost from eighty to ninety-five per cent. of their crops by the rot, while those who sprayed did not lose more than from one to five per cent. The efficacy of spraying apple, peach, pear, plum and cherry trees has also been established among our horticulturists, and hereafter the practice of spraying their trees will no doubt be general, as all concede that the secret of success has not only been discovered but also demonstrated before their very eyes."

The past season we had the advantage of the experience and confidence from previous efforts, and the results were all that the most sanguine had anticipated. Not only grape vines, but the various kinds of fruit trees were sprayed, and with the most happy results. The editor of the Farmer's Call visited our fruit farms the first week in September, and although he is usually very conservative in his expressions, he wrote of what he saw in the following strong language :

"We do not think we have ever before seen grape vines so heavily laden, and not one grape in a hundred was affected with the rot; while only a short distance away, vineyards in the same soil and under like conditions, except that they had not been sprayed, were so badly affected with the rot that their crops will not be worth gathering. Undoubtedly the fullest plum tree we have ever seen was one that had never matured a crop before on account of the ravages of the curculio. It was thoroughly sprayed this year, and the result was an enormous yield and of perfect fruit. Mr. Stahl has demonstrated beyond a doubt that the codling moth, canker worm, apple and plum curculio, pear and quince leaf blight, grape rot and mildew, currant worm, etc., can be prevented or destroyed by spraying with the proper mixtures, at the proper time, with the right kind of a pump. Certainly if we could take the farmers and fruit growers of this country to Mr. Stahl's fruit farms and show them the effects of spraying that we saw, every intelligent man among them would have a spraying outfit before another season, and would no more think of failing to spray his fruit trees and plants than he would of failing to cultivate his corn or potatoes."

Will I be considered presumptuous if I now urge you to investigate and thoroughly test spraying, speaking to you on this subject "as one having authority"—the authority that comes of work done and experience well gained? In my experience spraying has often paid 500 per cent., sometimes has paid 1,000 per cent.; is not an investment that promises such profit worth your candid consideration? Spraying will secure large crops of perfect fruit; it will also keep our trees and vines healthy and thrifty or increase their vigor and thrift, for it will rid them of the insects and fungi that sap their vitality. It has been my experience that it would pay to spray on account, alone, of the greater thrift and health of vines and trees.

In the general practice of spraying lies, more than in any thing else, the prosperity of the horticulturists of this country. Every worthy consideration appeals for the increase of the production of fruits; the public health and happiness would be promoted and prosperity and good citizenship would be increased, by such an advance in fruit growing as spraying may secure, by such an abundant fruitfulness of our orchards and vineyards as would follow the destruction of insect pests and fungous diseases. Hence, spraying appeals to us not only on account of self interest, not only on the lower but proper grounds of individual prosperity, but as well on account of the happiness of the masses and the true greatness of our country. More and better fruit means better men and women. The harvest of the tree and of the vine betters the character of him that makes possible that harvest as well as of him that of it eats. More fruit and less meat would usher in a higher civilization. The Divine Wisdom has never erred; when it

indicated that to tend the vine and the tree and to eat of the fruits thereof is man's proper estate on this earth and most conducive to his happiness and well being, it was right, and to-day, as then, fruit growing is the best and noblest of the vocations of men.

President Campbell: This is a very important subject, and if there is any thing to be said on the subject, you now have the opportunity.

Mr. Aldrich: Last year we took a new departure in regard to getting up an abstract of the proceedings of the meeting, and I think, so far as I have been able to learn, it was a very satisfactory step, and in order to bring the matter before the society, I now move that the Secretary be requested to prepare such abstract of this meeting as he did last year.

Mr. Albaugh: We certainly were all gratified with the general resume of that meeting, so promptly brought out. It was, in fact, the only printed matter we had to show that there had been a meeting at Zanesville at all last year, up to this time, and I think some steps should be taken by this Society to prevent this delay in the publication of our annual reports.

Professor Webster then read a paper entitled "Silent Partners," as follows:

SILENT PARTNERS IN HORTICULTURE.

BY PROFESSOR F. M. WEBSTER, COLUMBUS, OHIO.

In commercial parlance a silent partner is one whose name may never appear in connection with that of a business firm, and, to all outward appearances, he is a simple nonentity; yet, when weighty matters of policy or finance are to be considered, proves, of en, a most important member. The silent partner of a horticulturist might very properly be applied to his wife, though most married men have experienced the fact that wives are not always and at all times as silent as they seem. If, however, any may doubt this statement, let him attempt to surprise his better half with a new dress or a new bonnet a decade or so behind the times, or manage to be present on a wash day when the clothes line, with its burden of whiteness, suddenly and unexpectedly parts in the middle. Silent partners might mean the birds, to whose industry we owe so much, yet most beneficial birds are songsters.

With all deference to both the ladies and the birds, especially the former, permit me to say that it is to a still more obscure factor to which I would call your attention. My partners are not only silent and obscure to the outside world, but, in a majority of cases, even unknown to the horticulturist himself. My partners have no voice in financial matters, and share in no profit. The savings of my partners to the firm are incalculable, yet food alone is the only recompense received, and that is sometimes grudgingly allowed. In short, the partners to whom I refer are no more or less than beneficial insects.

It very often occurs that the canes of the raspberry are seriously weakened, in the fall of the year, by a parallel row of punctures (Fig. 1). Every year a greater or less number of inquiries come to me, asking about the author of these punctures, which often weaken the cane so that it breaks or is twisted off by the wind, and I am asked to give some way of destroying the author of this mischief. The insect which makes these punctures is what is known as the snowy tree cricket, *Ecanthus niveus* (Fig. 2), and the

punctures are made for the purpose of stowing the eggs—a nest, in fact. The human mother wraps her child in its blanket, and with cradle and song lulls it to sleep. The song and cradle are simple, yet the gray-haired chieftain or philosopher looks back to both them and the mother with reverence. But the cricket mother never sees her offspring. Therefore she places her eggs in the protection of the pith of the raspberry cane, and then dies. The crickets hatch from the eggs, in the spring, and make their way from this cradle to the outer world, to feed and subsist on some of the worst pests of the fruit grower and gardener, viz.: Various species of plant lice or aphides; but never, so far as known, doing any injury whatever, except to deposit their eggs, after the manner of their progenitors.

Here is one of your benefactors—one of your silent partners—yet you grudgingly allow it, not its food, or a part of your profits, but its very cradle. Lady beetles are known the world over as being in a high degree beneficial as destroyers of aphides, but it is somewhat of a question if the snowy tree cricket is not a rival. We shall experiment with the tree crickets this winter, in our greenhouses, with a view of subduing the species of aphides or green flies infesting them—a duty which lady beetles have invariably failed to perform.

There is another group of insects which are probably the most efficient of all in holding these aphides in check. I allude to the minute parasitic hymenoptera, or four-wing flies, often so very minute as to require a magnifying glass in order to see them. From the grain plant louse alone I have reared nine species or kinds of these useful insects, one of which is shown in figure 3. Others, very similar, attack the aphids of the cherry and plum; still others the aphids of the apple tree; others prefer the various species of aphides attacking cabbage, cucumbers, and almost all garden produce. When I tell you that a female aphid will produce from three to ten young a day, and that at the age of seven days these in turn begin to reproduce with the same rapidity, you will gain some idea of the consequences sure to follow an unrestricted reproduction. Prof. Huxly has made a curious calculation which will illustrate this point. Assuming that one aphid weighs one one-thousandth of a grain, and a stout man weighs two million grains, he estimates that the tenth generation alone, not adding the products of the generations which precede the tenth, would outweigh five hundred million men, provided all of the aphides survived through natural lives. The power that these little, insignificant partners of yours are exerting is beyond the limits of calculation.

Other pests of the orchard and garden are affected perhaps, considering their fecundity, to an equal degree. The plum curculio has two of these parasites, one of which Dr. Riley has found to sometimes destroy a larger part of the early maturing larvæ in Missouri. The codling moth also has two of these parasites in the Eastern States, and a third on the Pacific coast. Right here I wish to call attention to the fact that in spraying with arsenites these parasites of the codling moth are not destroyed. The young larvæ are killed, probably, before they could have become parasitized. This also brings up another feature of spraying with arsenical mixtures, viz.: Their use in seasons when little or no fruit is produced. In such cases spraying is usually neglected, for the reason that it is said not to be profitable to do so. It seems to me that these are, of all years, the very ones when spraying would be the most effective. The financial question of the difference between a short crop and high prices and a full crop and a low price, it is beyond the scope of this paper to discuss. But following seasons of a scarcity of apples a diminution of the parasite of the codling moth may be looked for. Hence, if you reduce the latter to a minimum by artificial means, then you place them nearer, in point of numbers, on a level with the parasites, restoring to these last a portion of the prestige they have lost through natural causes. But, you may say, do you not, by depriving them of their food, also reduce the parasites to a still lower degree, in point of numbers? I answer, no. Because, when one of these parasites can not get enough apple worms to subsist upon, it will turn to some of the eight or more other insects upon which it is known to prey, and subsist on them. So in forcing the codling moth to a minimum, in

point of numbers, you curtail only one source of food supply of at least one of its parasites. You push the parasites aside, as it were, but do not exterminate them. This feature of a variety in food habits is not at all uncommon among beneficial insects. For this reason the little red and black lady beetle, *Magilla maculata*, sometimes becomes, temporarily, a vegetable feeder, and this is no doubt true of other of our carnivorous beetles. But this is only a means of bridging over a scarcity of more desirable food, and this fact should be so considered in summing up their value.

But because I have diverged from the immediate subject of my paper do not infer that this list of silent partners is complete. There are the tree borers, each of which has its one or more enemies, which push their eggs through the bark of the tree, or probe their burrows and deposit their eggs in the fat bodies of the depredators. The canker worm and tent caterpillar fare the same, while on the fall web worm there are five species of these friends of yours doing their best to protect your trees from defoliation. The cabbage worm and tomato worm suffer in common with the rest, and are some years greatly reduced in numbers.

I have not yet told you of a family of extremely minute insects (Fig. 4) which lay their eggs in those of other insects and destroy them, thus, as it were, terminating a destructive attack in advance. Many of these are so exceedingly small as to require a magnifying glass to see them, but their numbers are very great, and the benefit derived from their work is of vast importance in keeping many destructive insects in check.

Then there is still another group of nearly, if not quite as minute insects, which pay especial attention to scale insects, or bark lice, on trees. The bark lice of the apple tree, the various scale insects of the grape, the cottony cushion scale of the maple, are all infested and to a greater or less extent destroyed by these industrious and prolific insects.

It is well nigh impossible to give you a comprehensive idea of the numbers and value of these partners of yours, because even the entomologist is almost daily making new acquaintances or observing old ones in new situations. So numerous are these parasitic species that, in seasons when other insects are unusually abundant, it is impossible to rear any number without securing more or less of the parasites.

I have so far been describing to you insects which, for the most part, are either quite small or extremely minute. There is another group which is composed of quite large, two-winged flies, having much the appearance of over-grown house flies. These are generally known as Tachina flies (Fig. 5), and are not the least serviceable of your silent partners, destroying great numbers of cut-worms, cabbage worms, tomato worms, the grub of potato beetles, the army worm, and, in fact, of every kind of grub-worm or caterpillar within their reach. With these last the eggs are stuck upon the skin of the victim, being usually, but not always, located where they can not be easily rubbed off. When the young maggot hatches from the egg it eats its way downward through the skin of the victim into the flesh, where it continues to subsist, avoiding the vital parts until full grown, when it abandons its victim—now little else but an empty skin—and crawls out to pass into the pupal stage, from whence the adult soon emerges. The insects of this group are numerous, and even the entomologist is not thoroughly familiar with them, hence it is impossible to say how numerous the species are. In point of numbers it is sufficient to say that it is no uncommon occurrence to witness the overcoming of the army worm, or some of the tree caterpillars, like *Datana angustii*, through their influence.

In conclusion, let me say that while I give you but a vague idea of the numbers and of the value of the services of these silent partners of yours, it is to be hoped that you will observe and recognize the value of these friends, and, though they do not offer a full protection, as Nature probably never intended them to do, they are worth more than their weight in gold to you every season, and but for the aid they give you the profits of your business would be materially reduced. As I have already stated, Nature probably never intended these parasitic insects to annihilate other species. In the great economy of Nature one species can only hold another in check under a normal environment. Farther than this they never go. But in this they do you invaluable services.

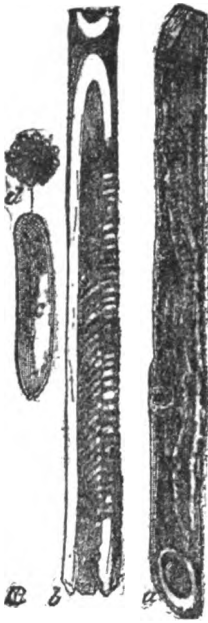


FIG. 1.
Raspberry canes punctured
by Tree Cricket. a, ex-
terior appearance of cane;
b, same cut open, show-
ing position of eggs; c,
egg; d, granulated end of
same. After Riley.



FIG. 2.
The Snowy Tree Cricket.—
Ecnanthus niveus. After
Riley.



FIG. 3.
Plant Louse Parasite. *Encyrtus websteri*, Howard.
After Riley and Howard.

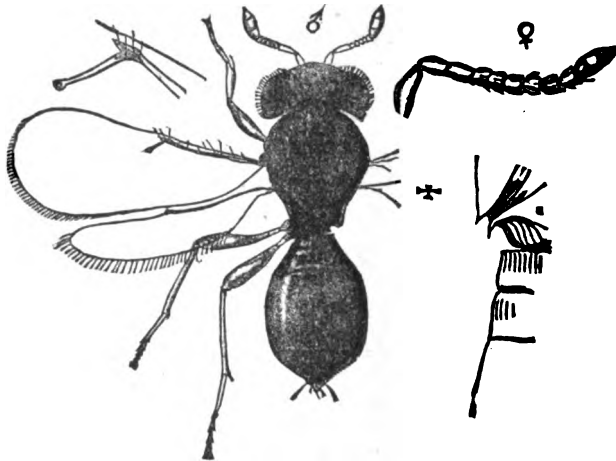


FIG. 4.
Egg Parasite. *Acoloides scitidis*, Howard.
After Riley and Howard.

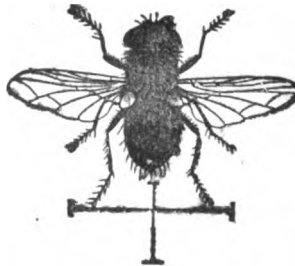


FIG. 5.
Tachina Fly. *Tachina flavicauda*.
After Riley.

The result of the voting for the election of officers was as follows:

President.....George W. Campbell.
 Vice-President.....O. W. Aldrich.
 Secretary.....W. W. Farnsworth.
 Treasurer.....N. Ohmer.
 Ad Interim Committee—E. H. Cushman, W. J. Green, William Miller, B. F. Al-
 baugh, M. Crawford, S. R. Moore, G. W. Trowbridge, L. B. Pierce, J. G. Bilderback and
 James Edgerton.

E. E. Bogue then read a paper entitled "A Few Varieties of Grapes Compared," as follows:

A FEW VARIETIES OF GRAPES COMPARED.

CONCORD.

The bunch loose and irregular in form; the berries with a heavy bloom over a purple skin.

Number of grapes on bunch.....	42
" fallen from bunch.....	6
" burst open on bunch.....	3
Diameter of an average grape	$\frac{1}{8}$ in.
Number of grapes with one seed.....	10
" " " two seeds.....	20
" " " three seeds	11
" " " four seeds.....	1
Total number of seeds.....	84
Weight of whole bunch.....	4 oz.
" stem, nearly	$\frac{1}{8}$ oz.
" 72 seeds.....	$\frac{1}{8}$ oz.
" 42 skins, a very small fraction less than.....	1 oz.

Total waste from every pound of grapes 5 oz., of which $\frac{1}{2}$ oz. is stem, $\frac{1}{2}$ oz. seeds and 4 oz. skin.

NIAGARA.

The bunch compact and nearly regular in outline; the berries with a bloom over a light green skin; the skin rather thin, but not very tough.

Number of grapes on bunch.....	58
" fallen from bunch.....	3
" burst open on bunch.....	7
Diameter of an average grape.....	$\frac{1}{4}$ in.
(For convenience 33 grapes weighing 4 oz. were taken.)	
Number of grapes with one seed.....	0
" " " two seeds.....	1
" " " three seeds.....	15
" " " four seeds.....	17
Total number of seeds in 4 oz.....	114
Weight of whole bunch.....	6 $\frac{1}{2}$ oz.
" " stem.....	$\frac{1}{8}$ oz.
" 33 grapes.....	4 oz.
" 114 seeds, nearly.....	$\frac{1}{4}$ oz.
" 33 skins	$\frac{1}{4}$ oz.

Total waste from every pound of grapes 4 $\frac{1}{2}$ oz., of which $\frac{1}{2}$ oz. is stem, 1 oz. seed and 3 $\frac{1}{2}$ oz. skin.

DELAWARE.

The bunch quite regular in form, obconical in shape; the berries with a light bloom over a red skin.

Number of grapes on bunch.....	68
" fallen from bunch.....	0
" burst open on bunch.....	1
Diameter of an average grape.....	$\frac{1}{2}$ in.
Number of grapes with one seed	45
" " " " two seeds.....	23
Total number of seeds.....	91
Weight of whole bunch.....	3 oz.
" " stem, less than.....	$\frac{1}{8}$ oz.
" " 91 seeds.....	$\frac{1}{8}$ oz.
" " 62 skins.....	$\frac{1}{8}$ oz.

Total waste from every pound of grapes $3\frac{1}{2}$ oz., of which $\frac{3}{8}$ oz. is stem, 1 oz. seeds and $2\frac{1}{2}$ oz. skin.

CATAWBA.

Total waste from one pound of grapes $4\frac{1}{2}$ oz., of which $\frac{1}{2}$ oz. is stem, 1 oz. seed and 3 oz. skin.

This variety was tested exactly in the same manner as the others.

VITIS CORDIFOLIA,

The common "frost grape" which has never been improved by cultivation. It is not the *V.estivalis* which produces what is called the "summer grape" towards the north. The fruit is not at all pleasant; bunches rather compact; berries ripened very unevenly; a very light bloom over a dark skin.

Total waste from one pound of this wild grape $8\frac{1}{2}$ oz., of which 5 oz. is stem, green and poor grapes, $\frac{1}{2}$ oz. seeds and 3 oz. skin.

From the above test it will be seen that of the cultivated varieties the Delaware in spite of the large seeds shows the least waste from a pound, and the Concord yields the greatest waste, namely $3\frac{1}{2}$ oz. and 5 oz., respectively. The waste of the wild variety, however, is much greater than in the Concord. It should be noticed that of 340 individual grapes opened not one was found but that contained at least one seed.

The seed bearing is the most exhaustive to the plant because it is in the seed that nearly all the ash is found, the pulp being made up principally of water and sugar.

Following is the result of Mr. H. H. Richardson's analyses of three of the varieties which have been mentioned:

	Delaware.	Catawba.	Concord.
Sugar	10.5	12.7	11.105
Tartaric acid.....	1.47	1.51	1.425
Cellulose .....	.176	.241	.328
Water	84.06	80.94	85.245
Ash .....	.599	.341	.276
Albumen and pectose.....	3.193	4.26	1.62

From this it is seen that the Delaware produces a much larger per cent. of ash than any of the others, being more than double that of the Concord. If we can in any way get a palatable seedless grape suitable to our climate, we shall have something like the ideal grape.

E. E. BOGUE, *Columbus.*

And thereupon an adjournment was had until seven o'clock, P. M.

EVENING SESSION.

The following Executive Committee was appointed by the President for the ensuing year: N. H. Albaugh, W. R. Lazenby, and N. Ohmer.

The following Committee on Final Resolutions was appointed by the President: R. A. Hunt, B. F. Albaugh, and C. L. Whitney.

On motion of a member, it was decided that President George W. Campbell, Vice-President O. W. Aldrich, and Secretary W. W. Farnsworth be the committee on Experiment Station.

The report of the Treasurer for the past year was read, as follows:

DAYTON, O., December 4, 1891.

S. D. BEAR, *Treasurer.* Report Ohio State Horticultural Society.

Date.	From what source received—To whom paid.	Amount.	Total.
1891.	<i>Receipts.</i>		
Jan. 19	Balance in State Treasury from N. Ohmer, Ex-Tr	\$148 03	
	“ check from Mer. Nat. B. “	326 32	
Aug. 1	Appropriations from State	850 00	
			\$1,824 35
	<i>Disbursements.</i>		
Jan. 28	Manus O'Donnell, stenographer	\$55 35	
Feb. 19	W. W. Farnsworth, postage and circulars.....	31 50	
	Barkdull Printing Co.....	42 00	
23	N. Ohmer, expense Columbus	5 65	
Mar. 26	W. W. Farnsworth, Sec'y, quarterly salary	75 00	
June 30	“	75 00	
Aug. 22	S. D. Gammell, expense at meetings.....	9 65	
	L. B. Pierce, “	9 65	
Sept. 4	G. W. Campbell, “	9 70	
5	James Edgerton, “	13 00	
18	W. W. Farnsworth, Sec'y, quarterly salary	75 00	
22	Janitor's bill at Columbus.....	3 00	
	O. W. Aldrich, expense summer meeting	8 45	
29	N. Ohmer, “	10 00	
Oct. 6	Geo. W. Campbell, Pom. at Washington.....	30 65	
10	E. M. Cushman, “	10 90	
	W. W. Farnsworth, “	34 65	
24	W. J. Green, expense summer meeting.....	9 90	
			509 05
	Balance on hand in State Treasury and 3d Nat. B.....		\$815 30
	Balance in State Treasury subject to draft.....	\$488 98	
	“ Third Nat. Bank “	326 32	
			815 30

DAYTON, O., January 2, 1892.

W. W. FARNSWORTH, *Secretary*:

DEAR SIR: I hand you my supplemental report for the year 1891.

Ravenna Meeting.

Date.	To whom paid and for what purpose.	Amount.	Total.
Dec. 11	Frank Ford, premiums	\$12 00	
	C. L. Whitney, "	8 00	
	N. Ohmer, "	4 00	
	E. M. Woodard "	8 00	
	W. W. Farnsworth, for self and C. W. Counter....	59 00	
	Daniel Deuer, premiums.....	16 00	
	R. A. Hunt, "	18 00	
	J. B. Hurst, "	59 00	
	Geo. W. Campbell, President, expenses.....	12 00	
	N. H. Albaugh, Ex. com. "	16 10	
	N. Ohmer, "	16 50	
	O. W. Aldrich, Vice-President, "	13 80	
	W. N. Tracy, Delegate, "	10 70	
	E. M. Woodard, "	6 05	
	R. A. Hunt, "	4 75	
	Michael Bitzer, "	4 80	
	John Pierce, "	16 65	
	L. B. Pierce, Ad. com. "	5 20	
	B. F. Albaugh, "	15 00	
	S. D. Bear, State Fair meeting.....	3 30	
	Postage	62	
	Ravenna meeting expenses.....	14 60	
14	W. W. Farnsworth, Secretary, salary	75 00	
Jan. 1	Balance in treasury handed to N. Ohmer.....	\$421 23	\$394 07

Respectfully submitted.

S. D. BEAR, *Treasurer*.

NOTE—The membership fees for the year were not received by Treasurer until the books were turned over to Mr. Ohmer, hence do not show in Treasurer's report for this year.—Sec'y.

Mr. Ohmer: I wish to speak of another matter that you all seem to be interested in. It is well known to you all, especially those who make exhibits, that there should be some improvement or changes made in the premium list for the Ohio State Fair. It has been suggested for many years back that this Society look over the premium list and revise it and make such improvements as in their judgment would be right. There are fruits upon which premiums are offered that should be excluded from the list, and some new fruits should be added to the premium list. I therefore move that a committee of three be appointed to look after the premium list, and if they will hand their report to me I will see that it is carried out at the meeting of the State Board of Agriculture.

The Chair appointed as such committee, after the motion was carried, Sec'y Farnsworth, Mr. Miller and Mr. Aldrich.

On motion of Mr. Aldrich, the report of the Treasurer was submitted to the Auditing committee.

The report of the committee on Awards being called for by the President, Secretary Farnsworth read the same, as follows:

Your Committee submits the following report :

Variety.	First Award.	Second Award.
<i>Apples.</i>		
Twenty-five varieties.....	J. R. Hurst.....	C. W. Counter.....
6 market varieties Nor. of Columbus	C. W. Counter.....	D. Duer.....
" " South " "	J. R. Hurst.....	.....
5 varieties for family use.....	C. W. Counter.....	J. R. Hurst.....
3 " " dessert apple.....	W. W. Farnsworth.....	J. R. Hurst.....
Best new seedling apple (no award)...	.....	.....
American Golden Russet.....	J. R. Hurst.....	C. W. Counter.....
Baldwin.....	C. W. Counter.....	D. Duer.....
Belmont.....	R. A. Hunt.....	J. G. Bilderback.....
Bellflower.....	C. W. Counter.....	J. R. Hurst.....
Ben Davis.....	J. G. Bilderback.....	.....
Fallwater.....	J. R. Hurst.....	C. W. Counter.....
Grimes' Golden.....	W. W. Farnsworth.....	J. R. Hurst.....
Hubbardston.....	M. E. Sweet.....	J. R. Hurst.....
King.....	C. W. Counter.....	D. Duer.....
Limber Twig.....	J. R. Hurst.....	.....
Newtown Pippin.....	J. R. Hurst.....	.....
N. Spy.....	M. E. Sweet.....	C. W. Counter.....
Paradise W. Sweet.....	J. R. Hurst.....	.....
Peck's Pleasant.....	R. A. Hunt.....	J. R. Hurst.....
Rambo.....	J. R. Hurst.....	C. W. Counter.....
Bawl's Janet.....	J. R. Hurst.....	C. W. Counter.....
Red Canada.....	M. E. Sweet.....	C. W. Counter.....
Rome Beauty.....	J. R. Hurst.....	C. W. Counter.....
R. I. Greening.....	M. E. Sweet.....	J. R. Hurst.....
Box Russet.....	J. R. Hurst.....	D. Duer.....
Smith's Cider.....	J. R. Hurst.....	J. G. Bilderback.....
Stark.....	J. R. Hurst.....	J. G. Bilderback.....
White Pippin.....	J. R. Hurst.....	C. W. Counter.....
Westfield Seeknofurther.....	C. W. Counter.....	J. R. Hurst.....
Wine Sap.....	J. R. Hurst.....	D. Duer.....
Morris Red.....	C. H. Waid.....	.....
<i>Pears.</i>		
Display of pears.....	W. W. Farnsworth.....	C. W. Counter.....
Three varieties winter.....	W. W. Farnsworth.....	C. W. Counter.....
Single plate pears.....	W. W. Farnsworth.....	C. W. Counter.....
Keiffer.....	D. Duer.....	.....
Seedling (no award).....	.....	.....
Lawrence.....	N. Ohmer.....	.....
Vicar.....	N. Ohmer.....	.....
<i>Grapes.</i>		
Quince, single plate.....	W. W. Farnsworth.....	.....
Collection and display.....	E. H. Cushman.....	.....
Single plate.....	R. A. Hunt.....	E. H. Cushman.....
Peaches.....	R. A. Hunt.....	.....

J. R. Hurst's exhibit of 5 plates of apples are distinctly worthy of commendation and at least three of the varieties first mentioned should be placed on the premium list, "Western Beauty," "Wagner," "Gelpin," "Fink" and "Black Gillflower."

G. W. TROWBRIDGE,
B. F. ALBAUGH,
WM. MILLER.

The report of the committee on Vegetables was then read as follows:

The committee on Vegetables submit the following report:

C. L. Whitney, first premium for best and largest display of vegetables.

Frank Ford & Son, second premium for best and largest display of vegetables.

Frank Ford & Son, first premium for best and largest display of potatoes.

Frank Ford & Son, first premium to No. 3 for best new seedling potato.

In addition, we find two varieties of very fine potatoes exhibited by A. F. Stillson & Son worthy of a premium, but none offered. We suggest the propriety of awarding a premium of one or two dollars.

Henry Stiers exhibited Carter's improved parsnips that are worthy of mention.

W. J. GREEN,

WM. N. TRACY,

R. J. TUSING,

Committee.

REPORT OF COMMITTEE ON NOMENCLATURE.

N. H. Albaugh presents a seedling apple from Belmont county, Ohio, of medium size, very handsome and beautiful, being of a rich and popular red color. It however appears to be rather over-ripe and the quality as determined by its present condition is such we can not commend it.

W. W. Farnsworth presents a seedling pear from C. W. Counter, Toledo, Ohio, rather above medium size, color green, scarcely ripe enough to be in its best estate. We however think from the texture and juice it is unworthy of commendation.

GEO. W. TROWBRIDGE, *Chairman.*

Rev. S. D. Gammel then addressed the Society as follows:

Mr. President, and Ladies and Gentlemen:

I dare say there has been some wonder felt that there should be a place on the program for a preacher; that the horticulturists of Ohio should care to have a sermon preached to them, but I suppose they wanted a little change after talking over apples, pears, peaches, plums and potatoes, the product of the orchard and garden, and they were ready to hear a sermon, a thing which people are not often ready to hear except on stated occasions. And if my remarks should seem like a sermon to-night, as possibly they may, I shall find my answer to that in a remark of Mr. Lamb, who having once been approached by Coleridge, saying to him "Charles, I think you never heard me preach?" and Lamb replied in his delightful satire: "I never heard you do any thing else." It may be there are some here who never heard me do any thing else and they would not be surprised to hear me preach this evening. I belong to this Society, and I grow some things. I could not bring specimens but I may borrow illustrations from things I have seen growing; from books and words, which seem the things I have the most success in growing, so that I am not as much of a horticulturist as the professor, who says he grows these things which I do not.

Incidentally to the growth of a few beets and beans and so forth, I have some right as a grower to be here this evening to take part in the exercises on this occasion.

There is one other thing which I try to grow, and that is a few ideas, a few of my own, not particularly creditable and not very many of them worthy to be put on exhibition, but by a little fertilization I have some results, not always satisfactory, but I believe, Mr. President, it is the same as with the horticulturists that I have some experience, some good results and some failures, I have no doubt. What is the thing we are

all seeking for after all—the grower of fruits and vegetables and the grower of ideas? Is it not the highest type of fruit and vegetables and the highest type of ideas, too?

I sometimes wonder at the solidness and good sense of the American people upon quality. They are not always going about satisfied with what they have accomplished, but those products known to lack quality are ruled out of the market and those known to have the quality are brought in and find successful sale. One thing we want is flavor; we want that in our fruits and we want that in our ideas. The large two-pound pear from California which we have seen had size, color and shape, but it had not flavor. Some of our ideas may be just as extensive and uttered in hollow sounding words, but yet lack that something which makes the difference between one man's ideas and another man's ideas; and that is flavor.

Dr. Beecher used to say that when he had nothing to say he hallooed. We are all growers together; some growing fruits and some ideas; all engaged in the dissemination of knowledge. Some of the brethren tell us they came to this meeting to get new ideas, to get knowledge and instruction, but there seems to be in one part of the country and another a great deal yet to be learned upon the common facts of horticulture.

They say there are people in the cities who find fault with the milk man when they find a certain yellow scum on their milk. They tell of a certain little fellow who went out from the city to spend a few weeks in the country with a family who had some cows; in the morning, when the boy went out, he saw a boy near the barn milking a cow, and he said: "Why, is that the way you get your milk?" "Yes," answered the boy who was milking, "how do you get yours?" "We get ours at the little store around the corner," was the reply. I was reading the other day of a little boy from the city who saw some tomatoes. "What are they?" he says. "Are they tomatoes? I supposed they grew in big red cans." And so they did, for him. I had a little experience of my own, illustrating the ignorance of some people in horticulture, and it was right under the shadow and influence of the Summit County Horticultural Society. It was this: Some of the boys came into my patch and opened a Hubbard squash, thinking it was a watermelon. Just think of the dense and inexcusable ignorance of these boys. Now, is there not need of this society going around in the dissemination of information to dispel this gross ignorance that abides amongst the people? We have indeed a great mission—a mission that we can not very well overlook or neglect.

We are becoming more enlightened every day. We have been told lately that the lightning rod men are going out of the business, because, they say, the farmers are educated, and know too much to buy their wares any longer. I don't suppose the farmers kill their pigs now by the condition of the moon. All these old fashioned whims have been cast into limbo with other useless superstitions, and I presume there are many yet to go. It is not strange, either, my friends, that people should have a great many whims. We are always looking for the reason for things, and we do not always find the right reason, and we do not have wise professors and experiment stations to come with spectroscopes and microscopes to explain things to us, so we go out and go to circulating among our friends and neighbors, and they, finally, being unable to assign any reason for certain things, very naturally fall into superstition.

I have heard brethren of the craft here to-day discussing these crops, these products of the garden and field, and they can not somehow agree as to which is the best variety, or as to which is the best crop, or which course is the wisest to pursue, and so they now fall back on the preacher, to have him tell which is the best crop. These are questions which concern the people on a great many farms, as it is an important question.

We are astonished at a statement from headquarters at Washington that the people are so much richer this year because of their splendid management of affairs, and they

never stop to think that it was our splendid crops and abundant blessings that have been poured out on the splendid land in which we have our homes, that we should thank for this prosperity.

It is natural for any one to think that his own crop is the most important and the best, just as every mother thinks her own children a little finer than any of her neighbors' children. When I was a boy, and brought here to Sunday-school, I heard a preacher tell of his experience in the West: Falling into conversation one day with a farmer, he asked him how many children he had, and he said he did not know. "Ask the old woman," said he. Then the preacher asked him how many hogs he had, and he immediately answered, 43 hogs and six pigs. He knew how many of the stock he had, but he did not know any thing about his children. Now with him, the best crop was hogs, every time. Down here a few miles southwest of us we raise immense crops of onions. I would say that was the strongest crop on the farm, by all odds. Out in here rich farms yield large crops of corn, and there corn is king, and corn is the best crop on the farm. Down south years ago, and perhaps still, cotton is king, and the best crop on the farm there is cotton, they will tell you. Again, our people are experimenting with the sugar beet to make our sugar, and I hope they will have reason to say that this is one of the best crops that can be raised in New Jersey and California.

Daniel Webster once said that if the turnip crop could not be raised in England they would not be able to pay the interest on the national debt; so then, the root crops may sometimes be of the utmost importance, and the best crop on the farm. Grass in some communities, for pasture in summer and hay in winter, is the best crop. Where stock is made a specialty, where they have their thirty thousand dollar Alderney herds, and their fine horses, such as the one that brought a hundred thousand dollars the other day in New York, it would not be strange if a man in Kentucky, where such stock is produced, would consider them the best crop of the farm.

It seems a little thing to talk about the chickens, and hens and eggs, but there is realized each year from this product of the farm not less than fifty millions of dollars, and it became of such vital importance to some of our farmers living near Canada, that they asked a protection of five cents a dozen on eggs which were shipped across our lakes from that country. Some think that this duty is iniquitous and unjust. Now if the government will lay a tax on every hen that does not lay I think that would be a good thing. I read the other day that at Rome two thousand years ago, by special dispensation the bachelors and old maids (I never call them that, but that is what the paper said) were allowed to come into the communities by paying a certain tax. So I might at length expostulate on the various products that grow so freely in this land from the lakes to the gulf, of the grand country that is given us to take care of and keep for those who come after us, but I have not answered my question yet. What is the best crop on the farm? I dare say that each of the growers have answered it for me. I suppose one has said strawberries and somebody else has said apples, another corn, and so on, yet I dare say you have anticipated my answer. The best crop raised on the farm are the farmers' boys and girls. If they are not the best crop on the farm I would like to know what is. Somebody asked Douglas Jerrold once which he thought was his finest production and in his pleasant way he said "my daughter, Rosa." There was a poor widow not so very far from the spot where we now are who lived in a log house, and raised a few potatoes and a little corn, and small vegetables that answered for the support of her family, and while she was raising these small products she was also raising that great man, James A. Garfield. You know the story of the Lincoln family, how they moved from Kentucky to Illinois and spent the whole winter in a building one side of which was open, and while living there raising their small crops on the farm, they were raising Abraham Lincoln, another product of the farm, just about as much as corn and wheat are products of the farm. Webster, back in New Hampshire, in those primitive times compelled the reluctant earth of that region to yield him a scant living, and one of the most pathetic accounts ever given in connection with Daniel Webster is that where he went into the house of a neighbor one day and found that they

had nothing to eat but grass fried in lard, a story almost incredible if it were not from a credible source. This was to be their substance until the next harvest. From this region rose Daniel Webster, the great expounder of our constitution whose fame has been in everybody's mouth and for whom a Nation mourned when he died. These are some of the products of the farm of which we boast and for which we are thankful. My special object is to lay emphasis upon the fact that it will not answer for us to overlook these young people who form a part of our household, in our anxiety and greed to get wealth and to get on in the world, and to make a success of our calling, but we must look after them. Is it not strange indeed that a man will give so much attention to his colts; this one he will develop into a splendid trotter that will show a mile in 2.08, and another one shall be a good roadster that will command a splendid price, and here is a strong draft horse that is suited to that work and one which is especially adapted to that work which it has to do. And those who have to do with sheep, how much time and attention they will give to the development of a particular quality most desirable to them, and yet, they will not give any care, time or attention whatever to their children, but they will allow them to remain out at night, the devil's part of the day, read bad literature and keep bad company, and take no interest in their studies. Away from home and when at home make themselves such strangers, as the story goes, that the little boy complained to his mother that the man that stays here Sundays had been striking him; that was all he knew of his father. Now is it not a strange fact that those who have most call and a just claim upon us can not be given as much care and attention as the beasts in the field? Surely, my friends, this thing should not be so, and we should turn from our apples, and pears and fruits and give more time and care to the culture of our boys and girls. I once asked a temperance lecturer from the South how it was that down there in the South he was doing so much good as a temperance lecturer, when we did not expect so much in that direction; and his reply was that the women down South had begun to find out that their boys were going to wreck and ruin and that they would scarcely survive another generation if something were not done to check the terrible ravages of drink. People may well wake up to the fact that the boys are worth saving, and that in order to be saved they are to be thought of, and studied and cared for, and have their tastes watched in order that they may be developed into just that sort of a man which they are best fitted to make. I had a class-mate once in a high school, who would not study; he would sit in the seat and copy from the books and when the time for recitation came there was clear evidence that he had not studied, and he only came to school because his father insisted upon it that he should go to school and prepare himself for college; and so they fought it out, that father and son, the one determined that he should go to school and the other equally determined that he would not, and this thing went on until one day the boy was suddenly missed from school and the next they heard of him he was running a stationary engine. Now, on the other hand, take an illustration in the opposite direction. I remember reading once of the father of Daniel Webster, up in the hills of New Hampshire. Webster said to his son: "Daniel, my boy, whatever it may cost, you shall have a college education," and the young fellow sat there and heard these words and could not find any utterance for the feelings that swelled his heart, and while his whole frame trembled, he laid his head on his father's shoulder and wept. Suppose Webster had been only a hard practical man, saying as some did when I was a boy: "I didn't go to school and I guess my boy can travel the same road and do just as well as I have done; what was good enough for me is good enough for Daniel." Suppose he had done that, I dare say that Daniel Webster would not have been the great man that he proved himself to be.

Train your boys, then, brother farmers and growers, and the girls, too, for a useful station in life. Train your boy and then when you have made a man of him we will write his name on our ballots and he shall go to Congress as Garfield did, and he shall sit in the White House as Lincoln did. The best product of the farm, the best crop that we ever raise on earth is the boy and the girl that is trained and brought up to love God, and Home, and Native Land. [Applause.]

Mr. Albaugh: In an army they have a squad of men that go ahead of the front rank with axes to hew out the way, and they call them pioneers. Sometimes I am afraid that I may seem to be one of these fellows in trying to open out the space so that we can get a matter profitably before our Society, and that ought to be my excuse for trying to intrude myself before the Society on several occasions to-day.

I have been inquired of to-day something about a peach whose merits have been proclaimed by every horticulturist and every society for the last year or two throughout the land. Probably a little history of the origin of that peach and some of its qualities may be, to those who are not especially acquainted with it, or who have not yet seen it; of interest. I allude to the Elberta. The original tree stands upon a farm 35 miles south of Macon, Georgia (I had the pleasure of seeing it), and is thirty years old and very large. The peculiarities of the Elberta are something like this: Its size is about like the Crawford late and its shape is near that of the Crawford early; yellow in flesh and magnificent in appearance and free stone—that is, it parts very readily from the stone, and ripens in its native location from the first to the tenth of July, and would ripen here about the tenth of August, or perhaps the first, and has that peculiar and desirable quality in a peach that it can be shipped in an ordinary freight car a week and arrive at its destination in good condition, without three-fourths of them being rotten. It is a success all over the country—in Connecticut as well as in Georgia; in Kansas as well as in Michigan. The demand for the trees is much too great to-day for the supply. The peaches sell for about two dollars a bushel. There is room for such fruit as that all over our land, and while I am not one of those who, after 35 years' experience in the nursery business, is ready to bite at every thing new that comes along (for I have been bitten a number of times, and worse than that I have been bitten with the Crandall current), yet I am too suspicious to take every one of these new varieties that comes along, but this is a peach that I can recommend to the fruit grower in every section of the country.

Mr. Pierce: The handsomest peach I ever saw and the most perfect in color and form and in size, was introduced in Washington as the Excelsior, and it is now called Crosby. It is claimed that it will stand considerably more cold than other varieties. It was fruited in New Hampshire and where other varieties did not withstand the cold winters it did well. It is a yellow tree stone peach and is certainly one of the beauties of the peach kind. It is a September peach and just before the Crawford late, I think.

President Campbell: Are these on sale yet?

Mr. Pierce: I think they will be this coming fall.

Mr. Albaugh: It is not common in the nurseries. This Elberta peach I speak of is getting to be quite common in all the leading nurseries.

Mr. Miller: Two years ago I bought five hundred trees of the Elberta and I was very cautious about planting them, and this year I succeeded in gathering a few and ever since I have been regretting that I did not plant five thousand trees, instead of five hundred. In quality, appearance and hardiness I think it is the coming peach for the north as well as the south. It will not ripen with us on the lake shore as early as Mr. Albaugh has mentioned. Those I gathered this year ripened about the middle of September, but I think as the tree grows older they will ripen earlier.

Mr. Pierce: There is another peach that originated a few miles from here that deserves wider dissemination: it is called the Lemon Free; it is decidedly a free stone peach, an excellent keeper, and when shown at our fair on the 6th and 7th of October was in good condition; it is as large as the Early Crawford; pale yellow in color, and has a sweet yellow flesh. It is doing excellently in Summit county, and I think it will eventually take its place among the good peaches of the country. It is not a new peach, but is ten or twelve years old, and I think it is a peach that is worth being planted.

Mr. Albaugh: I would like to inquire if any one present knows any thing about this variety of Japanese or Chinese peaches, I think one of them is called the Fong Fe, or something like that. It ought to be hardier than our native peach. I don't know any thing about it only what I have read in the discussions of the Indiana Horticultural Society?

Mr. Aldrich: I have some young trees two years old this spring and the blossoms were killed on them just as early last spring as any of the other peaches. Both of the Japanese varieties that I have are vigorous growers and make better growth than any others I have except the Elberta.

Mr. Trowbridge: Eight years ago when the Fong Fe first came out I obtained a tree of a New Jersey nurseryman, and as the tree progressed in growth I could not see for the life of me but it was a native growth or a native variety. If it was any thing different I failed to see it. After it got three years old it began to bloom a little and I found that it was as easily affected by frost as any variety I had. I saw an intimation in one of the papers that the Fong Fe was probably no other than a native variety, and I immediately grubbed it out.

President Campbell: Is it not true that these Japanese and Chinese varieties are unsuited for northern growth? I have been told by southern people that they were entirely unsuited for this climate.

President Campbell: The next question for discussion on the program is: "Shall we establish a scale of points for judging fruits."

Mr. Trowbridge: As I have had considerable experience in judging fruit it is perhaps proper that I should open the discussion. That same subject was brought before the Society by Dr. Warder some three years before his death, and at that time no definite action was taken on the subject. I have always thought it would be well and proper to adopt a scale of points in judging fruit, but if this Society should make a rigid rule and confine the judges to it under all conditions and circumstances, I think that would be very unfortunate for the reason that our fruit collections are large at times and there is a disposition to run the matter economically, and if the judges perform their duties properly it would exclude a great many of the collections and exhibits. I think we should have some standard or scale to go by and on all proper occasions where the exhibit is too large to burden the judges too much, they ought to use it in their discretion so far as they can make it valuable.

Secretary Farnsworth said that he was of the opinion that there should be some rule by which the judges should be governed in passing on the merits of the different exhibits in order that the exhibitor might know what to prepare for.

Mr. Pierce said that the International Association of experts tried to use a scale of points and found it impracticable, and he feared this Society would have the same experience if they adopted such a scale.

President Campbell said that the adoption of a scale might be desirable where new fruits were examined, and in cases where fruit did not come up to a certain standard, but there would be a great many difficulties in applying the scale to large exhibits on account of the time it would consume.

On motion of a member, Messrs. Trowbridge and Green were appointed as a committee to report at some future time for the purpose of getting up a scale of points.

Mr. Ford: Has any one here grown the Kansas raspberry?

Mr. Whitney: I procured some plants of the Kansas raspberry, and planted them in a pretty good place as to soil, and they made a pretty fair growth, and for the last two seasons I got some fruit, but the yield was small.

Professor Green: We have not grown it enough to know much about it; the berry is quite large, and I would judge it was a little later than the Souhegan. I did not find the growth so remarkable; I think it is in growth about equal to the Gregg.

Mr. Albaugh said there was a new variety of blackberry called the Ohmer, that promised well, but it would not be placed on the market until it was thoroughly tested.

Mr. Ohmer said that the Ohmer blackberry was first found near Urbana, Ohio, and he got it there and planted it, and recommended that members purchase a few of them for trial.

On motion, an adjournment was had until eight o'clock Friday morning.

FRIDAY MORNING SESSION.

President Campbell said that the death of Hon. Leo Weltz caused a vacancy in the committee in Nomenclature.

On the suggestion of a member, the committee as at present constituted, comprise the committee on Nomenclature, and that Mr. Trowbridge be made the chairman of said committee, in the place of Mr. Weltz, deceased, was agreed to.

On motion of Mr. Pierce, Professor F. M. Webster was made a member of the committee on Entomology in the place of Clarence M. Weed, who had removed from the State.

The President named Mr. Pierce as committee on Ornithology, and Professor Lazenby as committee on Forestry. All other committees to remain the same as in the report of the year 1889, excepting where new members have been named.

Mr. Aldrich moved that the Secretary and President have power to fix the time and place of holding the annual summer meeting, and the motion was carried.

Mr. B. F. Albaugh invited the Society to hold its summer meeting in Miami county, and the President announced that the committee would consider all invitations extended, and decide as to the time of holding the next summer meeting in due time.

The following Executive committee for the ensuing year was appointed by the President: Messrs. Albaugh, Lazenby and Ohmer.

A motion was carried that the committee on the Columbian Exposition be composed of the President and Secretary of this Society, and the Executive Committee, Messrs. Albaugh, Lazenby and Ohmer.

The committee on Final Resolutions made the following report, which was unanimously adopted :

Your committee on Final Resolutions respectfully submit the following :

Resolved, That the thanks of this Society are due and are hereby tendered —

1st. To the Portage County Horticultural Society, for their untiring efforts to make this meeting the grand success it has been, not least of which was securing and providing such an admirable place for our sessions.

2d. To the citizens of Ravenna, for their kindly interest and entertainment.

3d. To the speakers and essayists, for the able instruction afforded.

4th. To the ladies, who, by their labors, have provided us with such excellent entertainment for the inner man.

C. L. WHITNEY,
B. F. ALBAUGH,
Committee.

And thereupon the Society adjourned.

REPORTS FROM COUNTY SOCIETIES.

REPORT FOR LAWRENCE COUNTY.

NELSON COX.

Strawberries were rather below an average crop. They made a vigorous growth of foliage early in the spring, and bloomed fine, and kept on blooming for at least three weeks, but every three or four weeks the frost would kill all that were exposed, till the crop was very much reduced. The Crescent did well, and the Bubaugh turned out the most berries, while the Sharpless gave the best promise in the bloom, but was hurt most by the frost.

Raspberries did rather poorly. They rusted and made but little growth, and the berries were small.

Currants did well. The bushes made a fine growth, and produced fine, large bunches of fruit.

Cherries were about half crop, and very smooth and clear of worms. Early May the only variety cultivated to any extent.

Peaches were an average crop, and while they were of fair size, a great many of them did not ripen up on one side, but remained of a rather green or dull color, and did not have that fine peach flavor that is so much admired.

The apple crop was reported at about fifty per cent. of a crop, but it turned out better than that, and on our hill orchards there were some of the finest apples that I ever saw. For instance, young orchards of Rome Beauty trees, that were just about full enough to produce good apples, were very large and of good color, and held on very well and kept well. But the apple orchards on the river bottoms dropped very badly during the hot, dry weather in September, and the apples rotted in a few days. Spraying was used in my orchards, and the benefit was wonderful. We sprayed for insects, and to see what effect it would have on the fungus. One, a young orchard that had been so bad two years before with fungus on the apples and foliage that the apples were worthless, this year, by spraying four times, there were as large and smooth apples as could be.

AD INTERIM REPORT FOR OTTAWA COUNTY.

WM. MILLER, GYPSUM.

The season of 1891 was one of abundant crops of all fruits grown on the peninsula and islands. Apples, pears, plums and grapes were in abundant supply, and of unusually good quality, diseases and insects doing less damage than usual.

But the year has been a notable one on account of the abundance of our great staple crop, the peach. It is estimated that two hundred thousand bushels were shipped from Catawba Island and the Peninsula. This enormous crop found ready sale the entire season. The larger the supply the more buyers we have at our doors. Over half the fruit grown in this locality is handled and sold by the several shippers' associations. These are stock companies organized for mutual protection and help in marketing fruit.

The advantages afforded by these organizations are that they relieve the grower of the marketing problem, and place it in the hands of experienced and capable men make the fruit uniform in size and quality, and thus more satisfactory to the purchaser. The fruit is all run through graders, and each size placed by itself, and the package marked "A," "B," "C," according to the size it contains. When the customer gets his weekly price list, he can order fruit, knowing that it will be uniform in quality and size to the bottom of the basket. The fruit is largely sold directly to retail dealers, but if compelled to ask aid of a commission man, the companies select one outside the territory of their order trade, thus avoiding competition in prices of their own fruit.

The very low prices for which the small fruit sold this year will result in more thorough pruning, thinning fruit from overloaded trees, and the better cultivation of the orchards.

For an orchard of 1,000 trees, the following list, named in the order of their ripening, is a good one:

- 50 Mountain Rose.
- 50 Early Crawford.
- 200 Elberta.
- 100 Old Mixon.
- 100 Stump.
- 200 Crawfords, late.
- 200 Smock.
- 100 Salway.

The following varieties have been entirely condemned, or have few friends:

- Susquehanna, poorest bearer known.
- Hill's Chili, too small to be profitable.
- Barnard, too small to be profitable.
- Wheatland, shy bearer.
- Marshall, ripens with Smock, a more profitable variety.
- Foster, shy bearer, too tender for shipping.
- Chairs' Choice, Globe, Lemen Free, are highly spoken of, but not generally liked.

AD INTERIM REPORT FOR BELMONT COUNTY.

JAMES EDGERTON.

In reporting for the season now closing, we, of Eastern Ohio, feel that we had rather an unfortunate season. In the spring, things seemed to bid fairly well until about the middle of May, when strawberries were swelling out for maturity and the earliest were about half grown, and raspberries were (early variety) about the size of marrow-fat peas, we were alarmed by a cold wave that came down on us, which actually froze every green thing. When morning dawned all was stiff and even ice was formed the eighth of an inch thick. Cherries which seemed half grown were frozen hard, while strawberries, raspberries, blackberries and in short every kind of fruit we had seemed frozen dead. We fruit growers were a sick set, as it really looked as though there was a clean sweep of every thing. But it seemed useless to cry for spilled milk nor yet for killed fruit, so we had to grin and bear it. And in the course of time it turned out that some of the Crescents, as well as many other sorts, showed symptoms of vitality and when they had time to mature we had part of a crop, but unfortunately the cold weather held them back till our competitors, the Michigan berries, came in almost abreast of us. Consequently we realized very slim profits in the sale of these and the crop did not amount to much.

Then when raspberries came on the situation was scarcely improved; the early sorts were so badly killed they paid very poorly, while the later ones were little better, and we had to content ourselves with a pittance.

And in blackberries the same doleful picture is scarcely improved, and we would have had to chronicle an entire failure had it not been for Early Cluster, a variety that originated in New Jersey, that gave quite a sprinkle of fruit of quite fair quality. Snyder all killed. Wilson Junior also. One of my neighbors had a very fine plantation of Snyder and had them in very good trim and they were a total loss. Cherries, which were frozen hard and when they thawed out turned black, and one would have said were all dead, still hung on the trees and finally grew and eventually ripened, but were only good for the birds—or many of them; some were eatable.

Peaches, strange to say, thawed out and grew and matured where the trees were on high ground, while those a few feet lower all fell off.

We had a tree of Waterloo that were as large as small marbles, and I examined them early on the fatal morning and they were frozen hard. Still they grew and the tree was too full till they had quite turned in color, then they rotted.

Plums were very similar to peaches—where on high ground gave an abundant crop, while on low lands all were killed. Also quinces.

We had a few medium sized plum trees that had set a fine crop of fruit and we had sprayed them twice and thought we had them in good shape, but the frost did the business in one night that the curculio would have been weeks in doing if we had not killed him. But now with a spraying arrangement I would rather combat the curculio than frost, for I believe from my experience the Turk can be managed if taken in time.

Apples were about like other fruits where on high hills and above the frost line they gave a good crop. But I do not quite like the term frost line for I believe from what I saw that even on the high hills the frost or freeze was hard enough to kill, but it seemed like the difference might be in the way the thawing out came.

The apples were about in proper condition to spray before the frost came; but spraying is too hard to do just for pastime, and as the fruit seemed all killed we waited a little to see if any was left and only operated where there seemed to be enough to pay for the operation, and I presume it was then a little too late for best results.

Potatoes were a large crop and in some situations rotted badly, which I think affected most sorts; could see little difference in varieties in regard to rot, and I presume if the rainy season had continued a few weeks longer the crop would have been very largely destroyed, but weather dried up just at the proper time to save them.

Sweet corn was quite a fair crop and its consumption seems to be increasing each year. I see I have omitted grapes which were almost an entire failure from the effect of the frost—even the vines were many of them either killed or badly injured.

AD INTERIM REPORT FOR MUSKINGUM COUNTY.

BY S. R. MOORE.

Mr. President and Gentlemen of the Ohio Horticultural Society:

The past season is one checkered with good and evil. The late frosts destroyed a portion of the crops of many fruits in some localities, and then to cap the climax on the morning of May 17, the fatality was the greatest of all. Forest trees of many kinds and in localities presented the appearance of a singeing as by fire. Yet with all, in the west and north-west part of our county, a fairly good crop of peaches and apples has been gathered. The same is true in the south-eastern part, while the central part was almost totally destroyed. One strawberry grower worked the greater part of the night with a

force of hands covering several acres of his strawberries with straw, and to the astonishment of almost every body it was of no avail, and his crop almost a total loss. His nearest neighbor, having a few acres and sick at the time, unable to do any thing toward protection had a fairly good crop; not a large one, but better prices evened up the loss. A peach grower has just told me the long drouth injured the late varieties of peaches in the western part of the county already alluded to. The white grub has done considerable damage to some straw berry patches during the latter part of the season.

In some patches the plants are not so strong as they should be—retarded in growth by drouth.

Apple, peach, pear, cherry and, in fact all kinds of trees having well ripened wood and buds, together with a season of rest, we are hopeful that the next season may be abundantly productive and profitable.

The black knot has almost exterminated the plum trees, also the old morelle cherry. Insects and diseases do not appear to diminish.

Spraying has not been done to a great extent, and not very thoroughly when done.

Vegetables were plentiful and of excellent quality except in a few instances. Late cabbage was greatly damaged by the cabbage worm and drouth.

AD INTERIM REPORT FOR CUYAHOGA COUNTY.

BY E. H. CUSHMAN.

The winter of '90 and '91 was one of the mildest in the experience of our horticulturists. Consequently a heavy fruit crop was expected. On the night of May 7th we had a frost that cut the young grape shoots—strawberries were in bloom and other fruits which were far enough advanced, in some localities. On the night of May 16th, or rather the morning of the 17th, the most damage was done. Freezing of water continued until after 7 a. m. The destruction of grapes, peaches, plums and strawberries was quite heavy, but few apples showed flower buds, so the loss of this crop was not due to the frost.

The frost did little injury for the first mile from the lake shore and along the brow of our hills, but the damage was heavy over a strip a mile wide under the hills, and the country back of the hills was severely scorched. The work of the frost was very freaky where it cut the most vegetation—would be cut and missed in a most unaccountable manner. There were many cases where a young grape shoot would be killed with two green ones on each side of it, or all killed on the lower wire and alive on the upper, or *vice versa*.

The amount of freezing young Angouleme pears will stand is surprising. In my orchard they were well set at the time of the frost and were frozen so hard that they looked quite black, and the skin would slip off for some days after, but they recovered and so few dropped that it was necessary to give them a severe thinning. Plums were well set in the same orchard. The Washington all dropped off, while the Lombard was but slightly injured.

Currants, strawberries, raspberries and blackberries were all a fair crop with the writer, but in many places they failed; especially was this the case with the blackberries, although the buds were not open at time of the frost. Appearances would indicate that the *Minnewaski* was less injured than *Snyder*. It is later in blooming.

Apples were a complete failure. They did not bloom. Pears, peaches and plums were a partial crop. Quinces a failure.

Grapes are the great fruit interest of this section. After the frost it was estimated that this crop was about half destroyed. The figures after the shipping season proved

its correctness. There was shipped from Euclid Station for the year '91, 4,711,043 pounds of grapes; for '90, 9,270,000 pounds. The difference in yield was entirely due to the frost, as there were no other causes for loss, as mildew, rot, etc.

The Euclid Grape Growers' Shipping Association, with the following objects in view, did the following amount of business this year:

Cars grapes sold on track	75.
" " consigned.....	29.
Total cars shipped.....	104.
Representing.....	309,769 baskets.
Average for track sales.....	21 c's. per basket.
Consignment.....	17½ " "
General average.....	19½ " "
Showing a business for the year of.....	\$60,683.94.

Objects of Association.

To furnish choice fruit, full weight, careful packing, all under examination and direction of a thorough inspector.

To secure lowest freight rates.

To be prepared to furnish car-lots at shortest notice, and to offer unrivaled advantages.

Parties ordering must give satisfactory bank reference.

This Association is a great aid in handling the crop, and no doubt experience will aid in making it more efficient.

A few of our vineyardists are prepared to spray to prevent the ravages of rot and mildew. Spraying the past season seemed to check these pests.

There are but few grapes being planted in the Euclid district, but in localities contiguous to it we hear of plantings of 25 and 30 acres to be made the coming year.

Anthraxnose of the grape is getting quite a hold in our vineyards, and unless soon checked will cause a great deal of loss. I believe the day is not far distant when it will be as necessary to fungicide our vineyards as it is to cultivate them now.

Local horticultural societies and institutes are doing much to spread the necessary cultural information to make our business a success.

None of the new varieties of grapes introduced for the past few years prove of any general value. The Concord leads with the Warden as a promising second. The Early Ohio is a grape soon to be introduced, originating on the grounds of Mr. R. A. Hunt, in Euclid. It is of fair quality for so early a grape, hardy here and productive. Where early grapes pay it is likely to be of value.

AD INTERIM REPORT FOR LUCAS COUNTY.

BY W. N. TRACY.

The Lucas County Society continues to progress with its advance in years—not alone in the number of members. The increasing interest shows itself socially, morally and intellectually. The ten monthly meetings are held at the homes of farmers or horticulturists not always members. The average attendance is nearly fifty. The Society, being in one of the most productive counties and near one of the best shipping markets of the State, therefore furnishes a large and varied list of subjects for discussion which nearly all take part in and many important points are brought out. The Society was never in so prosperous condition financially as at the close of the present year. The

outside attendance nearly equals the members, showing that the little leaven scattered broadcast is working and increases the number of its members. The new President for 1892 bids fair to stir us up in a way that has never yet been equalled.

The Ladies' Floral Society meets in conjunction with us and furnishes the dinner which is socially enjoyed by all. They have one hundred and thirty members and still increasing. The year just closed has been very successful, socially and financially.

They pay their share of the programs printed, have their presidents and officers with their committees and at the close of the year present the ten ladies who entertain the societies with an appropriate present.

REPORT OF MUSKINGUM COUNTY HORTICULTURAL SOCIETY.

BY S. R. MOORE, SEC'Y.

Our Society is in a good healthy condition. We meet regularly once each month. The meetings have always been held at the homes of some of the members. During the winter months we meet at 10 o'clock A. M., the balance of the year at 1 o'clock P. M., always with lunch baskets well filled. This adds largely to the social feature and brings out the ladies and young people. During the past season we had with us in May Prof. W. R. Lazenby, of the Ohio Experiment Station; J. F. Keller, a successful farmer of Licking county. July, Mr. R. J. Black, of Fairfield county, gave his experience with pears, new and old. August, Mr. B. F. Swingle, of our own county, gave us a valuable paper on the early settlement of Ohio, the fruits and progress in horticulture, the organization of societies, etc. September, Prof. W. J. Green, of the Ohio Experiment Station, delivered a lecture on "Lessons of Season's Work," with illustrations on fungus diseases, insects, and how to prevent them. October, Prof. Webster, of the Station, delivered a valuable lecture on insects, our enemies and friends, and had a number of specimens with him. November, Prof. Wm. C. Warner, of the Ohio Experiment Station, was with us and described many valuable trees, plants, etc.; Mr. J. H. Dodd, of our own county, delivered a valuable address on the fruits of California, and the Pacific slope observations of his extensive travels in the far West, purposely for information and recreation.

All this with our home talent would make valuable reading to any one interested in horticulture or agriculture.

Let me say right here that Mr. Dodd is satisfied with Ohio and Ohio fruits.

We often find our exhibition tables well filled with fruits, flowers and vegetables. Some new and rare specimens are often to be seen and admired.

REPORT OF STARK COUNTY HORTICULTURAL SOCIETY.

BY MRS. S. O. EGGERT, SEC'Y.

The Society the past year apparently has not been in so flourishing a condition as formerly, not from a lack of interest, but from a failure on the part of some of the essayists to respond promptly, which failure diminishes in a great measure the interest of a meeting.

The exhibition tables this year have not been so heavily laden, owing to the fact that from late frosts in the spring, or other causes, the fruit and berry crop did not reach the usual standard of productiveness in all parts of the county, but withal some very fine specimens of various kinds of fruits have been on exhibition, and generally what has been shown was above the average in size and quality.

The strawberry meeting was held in one of the commodious halls on the fair grounds at Canton, with a good attendance. The show of berries in quantity fell below the usual display; in fact was very small for a county in which strawberries are grown so extensively as in the county of Stark, yet some of the specimens were remarkably fine. The small display is accounted for by the late frost in May, injuring many of the tender varieties and the fruit of other varieties not being perfect.

Among the distinguished visitors at our meetings during the year was F. R. Palmer, the enterprising fruit and berry grower of Mansfield, O. He was present at the strawberry meeting June 18th, and gave us a valuable and well-timed paper on "Strawberry Growing." Mr. Palmer responded to a call for further remarks and gave an interesting paper on "Home and Home Making."

The Society has added during the year three new members to the State Society.

The reports of the meetings are published monthly, each member receiving a copy, and at the end of the year are bound in pamphlet form, and a copy of the same sent to each member.

The Society enters upon the coming year with bright prospects, is active and earnest in its work, and no doubt its influence for good will be as telling in the future as it has been in the past.

REPORT OF COMMITTEE ON NOMENCLATURE

AT THE

FALL MEETING OF THE OHIO STATE HORTICULTURAL SOCIETY, HELD DURING TIME OF STATE FAIR, COLUMBUS, OHIO, WEDNESDAY, SEPTEMBER 17TH, 1890.

[Omitted from former report by oversight.—SEC'Y.]

SEEDLING GRAPES, BY GEO. W. CAMPBELL, DELAWARE, OHIO.

Peerless. Seedling of Belvidere and Muscat Hamburg. Color greenish white, with a light bloom. Bunch large. Berry medium, quality best, juice sweet, with a delicate, perfumed flavor. Seeds few and small, part easily from the pulp, which is pure flavored all the way through.

——. Seedling of Lady and Grizzly Frontignan. Color greenish white, with white bloom. Bunch long and moderately compact. Berry medium to large, quality nearly best, flavor sweet, with a rich, delicate juice and melting pulp, which separates easily from the seeds.

Bettina. Seedling of Belvidere and Muscat Hamburg. Color black, with a bluish bloom. Bunch medium to large, somewhat open and straggling. Berry medium to large, quality best. Sweet, with a juice of refined and delicate character. When fully ripe the seeds part easily from the pulp, which is rich and melting.

Blackwell. Native seedling. Color black, with a blue bloom. Bunch medium in size and rather compact. Berries medium to large. Flavor rich and sweet, with a refined melting juice. Quality very good. Seeds part easily from pulp, which is melting.

Welby. Native seedling, Labonsca type. Color black, with a light bloom. Bunch medium long and rather compact, rarely shouldered. Berry medium to large, and adheres well to the stem. Flavor sprightly and vinous, with only a slight trace of the native. Juice rich and dark, indicative of quality calculated to make a dark red wine. Seeds part easily from the pulp. Quality good.

WESTERN NEW YORK HORTICULTURAL SOCIETY.

GREAT BENEFITS FROM SPRAYING.

President Barry in his address said: "Judicious efforts will enable us to produce new fruits surpassing all previous introductions in size, appearance and quality; and new flowers exceeding in beauty and attractiveness any thing yet known. The first and last thing for a farmer to do, is to find out what his land needs. No use for him to buy all the fertilizing elements when only one or two are needed.

Until recently doubts have been expressed as to the efficiency of spraying fruit trees, but this year's tests have satisfied the most incredulous that there is merit in the operation. The codling moth, the bud moth, canker-worm, tent-caterpillar, curculio, as well as the apple scab fungus, mildews of different kinds, and the various grape diseases, can all be controlled, if not prevented, by applying the proper remedies. The great excitement caused by the New York Board of Health last summer, in regard to spraying grapes, caused great loss to growers and, so far as we can learn, was unwarranted. Only the faintest trace of copper was found by analysis, and it could never have done any injury; but the outcome proves the importance of spraying with great care, and following the instructions given by the Department of Agriculture, at Washington.

Prof. Fairchild, of the Department of Agriculture, said, in his paper on the "Toxicology of the Copper Compounds when Applied as Fungicides," that copper is excluded by boards of health from foods as injurious; but after a seven months' discussion by learned scientific physicians in a convention held in Germany, the verdict was, "not necessarily." No example showing fatal effects could be proved. It was fed to cattle on hay. All marls, all famous mineral springs, as well as the liver, kidneys and all foods contain copper. Laborers in copper mines are rarely sick. The copper present on grapes sprayed seven times, commencing July 15, with the Bordeaux mixture, was from a trace to one-fifth of a grain per pound of grapes. The mixture need not be more than one-third of the strength usually applied. Begin the treatment early, and later use the ammoniacal mixture to assist the rain in washing away the former. Trees treated with the Bordeaux mixture gave 42 per cent. better fruit, and with copper acetate 28 per cent., while chloride of lime gave fruit 20 per cent. poorer when used on quinces. The leaves dropped early take fertility with them, and leave the tree enfeebled.

Prof. T. T. Van Slyke, of Geneva, N. Y., speaking of the "results of analyses of some substances used in spraying," said that sulphate of copper was mostly pure, while copper carbonate varied considerably, some being adulterated to a great extent, so that it should always be tested. Copperdine costs twice as much as it should, and is somewhat adulterated. Fruit growers who use large quantities might with economy prepare their own fungicides. To test copper sulphate, put it in warm water, where it should become dissolved, and copper carbonate is soluble in nitric acid or strong ammonia water. In many cases after he had found that advertised preparations were badly adulterated, he had seen testimonials from persons who had used them, which called them the "salt of the earth." Probably those people received free samples, and felt compelled to recommend them or keep silent. In order to get a tonic dose of copper sulphate from sprayed grapes (as much as a physician would recommend for a tonic dose), a person would have to eat eight to ten pounds of grapes, skins and all. To get a dangerous dose, one must dispose of many thousands of pounds, which would be more dangerous than the copper.

Prof. Craig, of the Horticultural Experiment Farm, Ottawa, Canada, showed a chart which gave the per cent. of salable fruit from trees which had been sprayed with the Bordeaux mixture, to which had been added Paris green. The gain was very marked, as the codling moth and the apple scab fungus can be treated at one application of such a mixture. Prof. Van Deman, of the Agricultural Department, urged that Paris green should not be used in these solutions while the trees were in full bloom,

as the bees would be injured. C. H. Perkins, of Newark, called attention to an article that is being widely printed in Germany, France and Great Britain, to the effect that American imported fruit contains poison, in the form of arsenic sprayed on the trees while the fruit was growing. The effect was a growing prejudice, not only against barreled apples, but against evaporated apples also, which is seriously affecting the price. The charge he declared to be false, and the attention of Secretary Rusk was called to it by a resolution. Prof. Van Deman said he was sure the accusation would receive prompt attention, and that our consuls would be instructed to explain the matter fully to the buyers.

Prof. Beach spoke on some fungous diseases of the apple. Powdery mildew attacks both sides of the leaf, absorbing the juices. There are two crops of spores by which the disease is spread. Use the Bordeaux mixture. The apple scab fungus is developed in cold, moist weather. It gives a velvety appearance to the fruit. Spraying with Paris green had given good results. The apple rust and bitter rot are propagated by spores. The rust eats out the substance of the leaf, leaving only the thread tissue, and causes what is known as "cedar apples" on "cedar trees." Spraying has no effect on it. Gooseberry mildew can be perfectly controlled at Geneva, N. Y. Spray when the leaves are unfolding and, in the absence of rain, again in three weeks—one ounce to a gallon of water. The cost is one cent for 25 bushes. The Industry and Wellington Glory are the best varieties. Black knot on plum and cherry will destroy the business of raising them, unless the disease is extirpated by the government. Insects are frequently found in the affected parts, but they are not the cause. On the first appearance of the malady the tissues swell. Then cut down far enough to be sure of getting all of the affected part; clear out wild cherries and plums. Growers do not realize the danger. There should be a law compelling owners to cut out affected trees. George T. Powell said the disease had destroyed the plum industry of the Hudson River Valley. His whole orchard of plum trees was destroyed in one season by black knot, which had spread from a neighboring hedge row. In California the law compels the posting of warnings where the disease exists. The affected trees must be removed. The legislature is to be asked to enact a similar law.

"How to Obtain more High Grade Fruit," by Geo. T. Powell, director of the New York State institutes, was an interesting, instructive lecture. Perfect foliage is necessary for the production of high grade fruit. The life-giving leaves of a tree should not be checked in their action by blight or their usefulness destroyed by insects. With healthy trees, sound, long-keeping fruit is possible. Since he had begun spraying there had been no loss from rotting among the apples he exported. Many people hold that the variety of apple which brings the money should be grown. Some fair-looking varieties sell well once or twice, but they do not make or hold a market. The speaker illustrated the point by showing an apple of the Jonathan variety so beautifully colored as to be almost irresistible to the eye, and it is of equally fine flavor. Such fruit will sell any where at a good price. Color is obtained by a system of trimming, which exposes the fruit to the sun. The orchard should be well drained. Trees with wet feet can not do well. Give thorough preparation of the soil by plowing clover sod and planting hoed crops. Buy of known nurserymen. Trim so that the limbs will not start opposite each other, for then the tree would be likely to split down when older. Trim all bruised roots; cut them with a slanting cut on the under side so that the cut side will lie flat on the earth. Fine rootlets will start from these cuts. Trim early and often, a bud here and a branch there. Nothing more than a knife need be used for the next ten years if used in time.

Prof. Roberts, of Cornell, spoke on "Methods of Improving and Maintaining the Fertility of Orchards." In most cases there is more fertility already in the soil than is needed for the trees. Many young orchards have been ruined by the too frequent use of manure. It is not fertilizers to increase the richness of the soil, but proper treatment to bring out the fertility already existing there, that is needed. The land should be dry; if very wet it should be underdrained. Unless the soil is of a peculiar nature, plow

deep and often for a year or two before setting. Trees should be trimmed. Horticulturists should draw a sharp line between fruit-growing and forestry; should economize on the fertility of the orchard and not grow any more trees than necessary. A grape vine in his grandfather's yard was never trimmed, covered about a quarter of an acre, and he never saw a good bunch of grapes on it. After the orchard matures, sheep or other animals should be pastured and fed in it, thereby restoring the food elements taken by the producing trees. The orchardist is growing too much wood, too many seeds, too many inferior, bad-flavored, poorly-colored apples. Sheep are the best insecticide a fruit grower could use. Orchards may occasionally need manuring, and high-grade phosphates may be beneficial.

A report on vegetables was made by L. C. Corbett, of Cornell. Staminate shoots of the asparagus are larger and earlier by 33 per cent. than the pistillate. The Bush Lima is good. Peas on clay soil have larger vines and their season is longer. Transplanting onions gives more growth, greater uniformity, and earlier ripening. The Rural trench system for potatoes was highly commended. The system with level culture conserves moisture. The land is better prepared and less labor is needed to get rid of the weeds. Nitrate of soda gave good results when used on tomatoes. The potato stalk weevil is a new pest whose eggs are laid in the stalk. The only remedy yet known is to burn the roots. (I do not see how one can do that.)

Bacteria are not confined to any one family of vegetables; but go from one to another. The potatoe scab is, according to Prof. Fairchild, a fungous disease and no diseased tubers should ever be planted. Ground filled with humus accelerated the growth of the parasite.

Prof. A. N. Prentiss, of Cornell, made a report on "A Year's Progress in Botany in its Relation to Horticulture." These subjects can not be separated as each aids the other. We must have a life history of fungi before a remedy can be found. In case of all plants a prevention is better than a remedy. Give favorable conditions for growth and development. There are over 100,000 varieties of flowering plants; but few are need. The most important addition we have had in many years is the tomato. We can add to our list by importations and by improving our own, which will give the greatest value. Are seedless fruits as good as others? The banana, Corinth grape and pine apple are seedless. Such a condition would be of great value in the case of the raspberry.

Prof. Craig spoke of "Plant Breeding." Canada can grow peaches, and one grower had been offered \$1,000 for his crop. He is crossing varieties to produce a cross that will mature in the far west. A cross between the Gregg and Cuthbert has the Cuthbert characteristics, with some fine berries. A cross of the Gregg with the Snyder blackberry gives hardy plants; but so far the fruit is worthless. The Shaffer and Snyder have been crossed. The Pearl gooseberry, which excels the Downing in productiveness, was crossed with the black currant. The foliage of these seedlings varies from that shown in the perfect gooseberry leaves, down to that of the currant. He showed photographs of many of the seedling fruits.

President Barry said that the introducers of new fruits are seldom remunerated as they should be, but they have the satisfaction of knowing that they have benefited their fellow men. Their names will be remembered long after the rest of their associates are forgotten.

Secretary Wolverton, of the Ontario Association, said it had 2,200 members, a result largely due to the fact that it has a monthly publication in which the members relate their experiences.

L. J. Farmer spoke of "Strawberries, their Care and Culture." As a rule, strawberry growers spread out—at least too much. Give thorough culture, to clear the land of weeds, before setting; manure heavily and cultivate often. On sandy loam the Warfield, Haverland, Michel's Early, Eureka, Parker Earle and Burk are good. The Parker Earle is a very promising variety. Set the plants out in rows, which should vary with the variety. He had seen the Eureka 12 feet wide after the runners had set. In answer

to the question, "What new variety can be recommended for planters?" he said the Parker Earle had given good results. The plants sent from Texas thrive as well as those that he had grown. The only trouble with the Yale is its lack of productiveness. It is adapted to clay soils. It is the best canning berry ever introduced, having a rich dark color. In New York the Eureka sold for 15 while the Crescent brought 5 cents. He thought that knotty berries were caused by imperfect fertilization and that they occurred when heavy winds prevailed at the time of blossoming, blowing the pollen away and thus injuring the young forming fruit. Incidentally to the discussion, Dr. Collier said that the fungous spores can be carried a long distance. The pollen of the birch had fallen on the deck of a vessel 10 miles from shore.

C. S. CHAPMAN,
In Rural New Yorker.

THE PALACE OF HOME.

BY ROBERT WALKER, GRIGGSVILLE.

The happiest kingdom that ever was seen—
The farmer was king, the wife was the queen;
He went to his orchard of fruit rich and rare,
The peach and the apple, the plum and the pear.

He went to his work with his heart full of glee,
His toil was a pleasure, his labor was free;
In gathering fruit, or in harvesting grain,
He was lord of the realm in his little domain.

He knew that his wife had great love for a flower,
So he planted some roses and made her a bower;
It was there that the thrush and the robin and wren
Sang sweetly at daylight to wake them again.

You may talk of the beauties of Fame's splendid dome,
But happiness dwells in the Palace of Home;
If you ask for an emblem of heaven above,
Take a home on a farm with contentment and love.

Then quit your tobacco, your whisky and beer,
And furnish a home with enough of good cheer;
Let this be your maxim wherever you roam:
"Let happiness dwell in the Palace of Home."

DESIRABLE SHADE TREES—A BRIEF DESCRIPTION OF THE BEST VARIETIES.

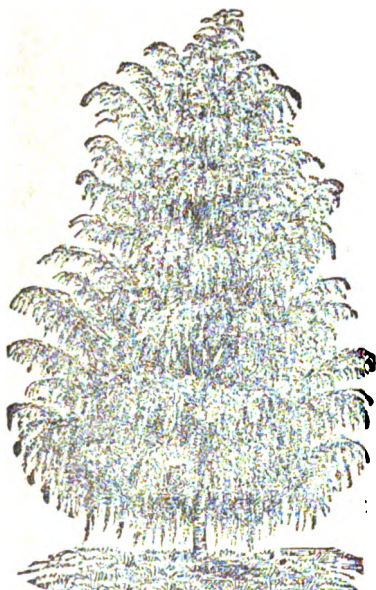
BY J. J. HARRISON.

[This paper was expected at annual meeting at Ravenna, but the illness of Mr. Harrison prevented.—SECRETARY.]

It is with a feeling of diffidence that I attempt to mention a few desirable trees and shrubs for general planting. Tastes differ so greatly that what one may admire another will condemn. I know of no tree that I should be prouder to see in my lawn collection

than a fine specimen of Weeping Cut Leaved Birch, erect, slender, tall, symmetrical, with silvery white bark, finely cut foliage and graceful pendant branchlets. And yet a friend of mine objected to it, remarking that he was not ready to turn his lawn into a cemetery. The association spoils the tree for his planting—why the association I cannot tell; possibly the first specimen that attracted his attention was growing in a cemetery and as first impressions are the strongest he cannot disassociate it from the gloom of the grave—but to me it is a tree of sunny cheerfulness, whose delicate grace renders it the queen of trees for lawn planting. Beautiful in summer with its light, airy, pensive branches in quiet repose, or swayed and caressed by the passing breeze, or in winter as it lifts its head among its compeers a quiet sentinel, its bark on pole and branches vying with earth's winter mantle in silvery whiteness.

The constitution of our minds differ as greatly as our countenances. No two faces can be found exactly alike, neither can any two minds. The same marvelous principle applies through all nature, even down to the trees and shrubs whose merits are the object of this paper. The great diversity of character that is exhibited among trees even of the same genus in outline, trunks, branches, leaves, twigs, etc., is unlimited. Assign a child with the task of finding two well grown trees exactly alike, and though he were ever so faithful in the search his youth would pass to manhood, that to decrepitude and himself to the grave without the fulfillment of his task. Nearly every tree and shrub named in this list may be objected to by some who may have met with them under unfavorable circumstances. Growing perhaps in unsuitable soil, too wet or too dry for the species. Or soil naturally sterile, or impoverished of the elements necessary to their fullest development or deformed by being in too close proximity, crowded and overshadowed until it has become stunted, warped or twisted out of natural shape, like the bodies and even souls of some of the human species. Trees as well as men must have propitious surroundings to develop the highest type of comeliness. No tree can attain its greatest beauty without its surroundings are such as to produce a healthful, vigorous growth. The soil must be of such a quality that it will supply all the wants of nutrition. Room must be given it for the fullest development of every root, limb, twig and leaf. Few thus attain the full measure of their beauty without complete exposure to the sun. It is true that certain species of trees and shrubs will develop more fully in shade than others. In the forest the sympathy of the individual tree must to a great measure be merged in the grand effect produced in the whole mass. It is also necessary to sacrifice the highest type of individual perfection in lawn and park grouping to produce the most striking effect. Here is where the landscape gardener's art "doth mend nature"—so arranging, combining or contrasting the individuals that the expression as a whole, will produce the most pleasing effect. The Cut Leaved Weeping Birch heretofore mentioned is botanically *Betula Pendula Laciniata*.



Betula Alba—European White Weeping Birch.

Betula Alba—European White Weeping Birch. In growth about the same as the Cut Leaved, but not as delicate in branch or foliage. It has silvery white bark and as it attains age drooping branchlets, retains its leaves later in the autumn, assuming a mellow golden hue most charming to every lover of autumn foliage.

Betula Fastigata—Pyramidal Birch. This tree has an elegant pyramidal form similar to the Lombardy Poplar, although not quite as fastigiate. Like the preceding it has silver white bark and is highly ornamental in every situation. There are several other varieties of the *Betula* family including two more of pendulous habit and one with purple foliage, but the ones described are the most prominent.

Fagus—The Beech. A grand forest tree both in Europe and America, the leading sorts attaining large size, and covering vast tracts of land with dense forests. The soil in which the Beech naturally thrives best is not the richest in humus but usually a common clay, and not as valuable for general agricultural purposes as some soils. Still it transplants easily, and will thrive in almost all soils. While the native trees are grand, noble trees and should have a place in all large plantings, I shall confine my remarks to the varieties that are the most ornamental in their character.

Fagus heterophylla—Fern-leaved Beech. A tree of elegant roundish habit, and delicately cut fern like leaves; remarkably graceful and pretty during the growing season. One of the most desirable lawn trees.

Fagus incisa—Cut-leaved Beech. This is more erect and free-growing than the fern-leaved, with deeply cut foliage, a variety of great excellence.

Fagus pendula—Weeping Beech. A remarkably vigorous, picturesque tree. Its mode of growth is extremely curious; the trunk usually obtains a perpendicular, with branches twisting, tortuous, spreading and pendulous. A specimen thirty to forty feet high, in the distance has a grand fountain like appearance when covered with its wealth of glossy, luxuriant foliage, but in winter, when divested of its leaves, and the twisting, tortuous branches are revealed, the illusion has vanished.

Fagus purpurea—Purple-leaved Beech. This is one of the finest of tree novelties, attaining a height of forty or fifty feet. In the spring its young twigs and leaves are of a bright purplish color, approaching to crimson, gradually changing, as the season advances, until the autumn, when it fades down to a dull, purplish green, thus contrasting all the season through with the lively green of other trees. The majority of purple beech are seedlings and vary somewhat in the depth of their coloring. *River Purple Beech*, which is propagated by grafting, is the most desirable sort, the purple being darker and the crimson more distinct.

Magnolia. All the large varieties so far known are natives of this country; the foreign, although not attaining to as great size, are much more floriferous. All are remarkable for the richness of their foliage, and several for the enormous size of their leaves. Some varieties produce a wealth of blossoms before the foliage makes its appearance, and other kinds producing flowers of exquisite fragrance. All are not hardy, but such as are herein named are hardy here. The whole family are somewhat difficult to transplant, more so in fall than in spring. Even in the spring success is doubtful if delayed until the leaf buds are much swollen.

Magnolia tripetala—Umbrella Tree. An American variety. Its immense leaves make it a noticeable object wherever planted. The flowers are no less conspicuous, being four to six inches in diameter, which are produced in June, and which are succeeded by large, rare-colored fruit cones, which open when ripe, the scarlet seeds hanging from them by slender threads. Its tropical foliage, prominent fruit cones and scarlet berries attract attention the season through.

Magnolia Soulangeana. This is a hybrid of Chinese lineage and one of the most showy and popular of hardy flowering trees. One of the first to put forth blossoms in the spring before the leaves appear. The flowers are large, tulip-shaped, the upper portion of the petals are white, the lower shaded purple, and produced in such profusion that the limbs and twigs are scarcely visible. A well-grown tree in full bloom, with thousands of expanded flowers, is a magnificent sight, resembling an immense pyramidal bouquet fifteen or more feet high. Some years ago a Mr. McIntosh, of Cleveland, had such a tree at his nursery, for which he was offered five hundred dollars if he would safely remove it to a Euclid avenue lawn.



Magnolia obovata purpurea—Chinese Purple Magnolia.

Magnolia Speciosa—Showy Flowered Magnolia. Similar to the *Soulangeana* in growth and foliage, but the flowers are not quite as large, the white predominating; it is about a week later in blossoming and the flowers remain on the tree in perfect condition longer than those of any other of the Chinese varieties.

Magnolia Superba. This is another Chinese hybrid, differing but little from the *Soulangeana*, except the flowers are a little darker.

Magnolia Conspicua—Chinese White Magnolia Chandelier or Yulan. A Chinese variety especially attractive; its large, white, fragrant flowers covering the tree before a particle of green appears.

Magnolia obovata purpurea—Chinese Purple Magnolia. This is more of a shrub than tree, growing six to eight feet high with a breadth usually greater than its height. Its leaves are of a peculiarly deep glossy green, with showy purple flowers in May and June. It is

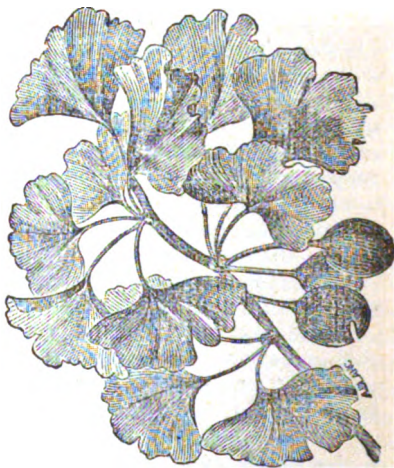
not quite as hardy as the *Soulangeana* type, but it does well in the northern part of the State under the influence of the lake.

Salisburia Adianthifolia—Ginkgo or Maiden's Hair Tree. A remarkable rare and elegant tree from Japan, with long branches leading outward and upward at an angle of about 45 degrees, and curious palmate leaves resembling the Maiden Hair Fern. It is a free grower, attaining a height of forty to fifty feet. It produces a large edible nut. Should be planted near the walk or house, where its singularly pretty leaves can be readily seen.

Acer Maple. A family of trees of vigorous growth and regular outline, many of them remarkable for the beauty of their foliage, especially in autumn when their green crimson and gold impart to many a landscape wondrous beauty. Their general adaptation to most soils and locations deservedly renders them universally popular. As the American varieties are generally well known it is unnecessary to mention them here, but I will make mention of a few of the foreign sorts.

Acer platanoides—Norway Maple. A native of Europe, as its name indicates. It is a very inferior, tardy growing tree for the first few years in the nursery, but as it becomes established its growth is stout and rapid. Its foliage is more shining, darker and denser, it puts forth its leaves earlier in the spring and retains them later in the fall than the sugar maple. These peculiarities, combined with compact habit and sturdy, vigorous growth as it attains age, make it one of the most desirable for the street, park or lawn.

Acer Schwedleri—Purple Leaved Norway Maple. This is a new, beautiful, distinct and conspicuous variety, with young shoots and leaves of a bright purplish crimson color, which turn to a purplish green in the older leaves. It is one of the most desirable trees of recent introduction.



Salisburia Adianthifolia—Ginkgo or Maiden's Hair Tree.

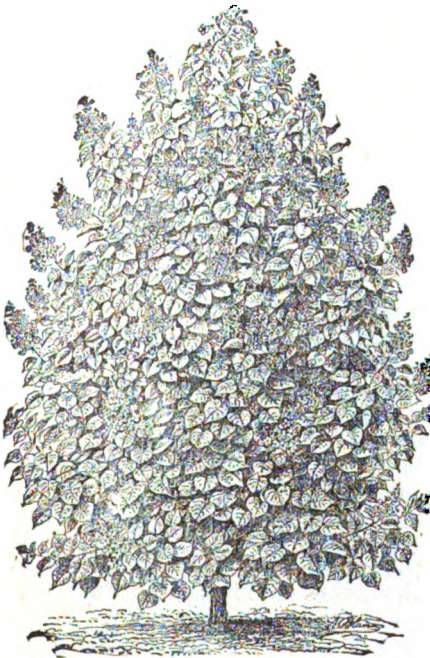
Acer Reitenbachii—Reitenbach's Purple Norway Maple. A new distinct variety, with bronzy purple leaves, which retain their color well through the season.

Acer Wierii, Laciniatum. Wier's Cut-leaved Silver Maple. A variety of the Silver Maple, and one of the most desirable trees, with deeply cut foliage. Its growth is rapid, with slender shoots, giving it a graceful, pendulous habit. The *Acer* family is very numerous and widely distributed over the face of the earth. No introduction of foreign trees has created so universal sensation as that of the Japanese Maples. A distinct class of dwarf bushy trees of singular grace and beauty. There are many varieties. Some with highly colored leaves, some with an almost pure white variegation, some pink, some purple, some with crimson twigs, some deeply and delicately cut, giving them an elegant, fern-like appearance. All would be desirable if they would adapt themselves readily to the change of climate and soil, but unfortunately they will not, at least that is my experience, and I would advise no one to indulge in them, unless they have an especially protected position in which to plant them.

Esculus. Horse Chestnut. All the varieties are of somewhat formal outline when young, but as they increase in age they lose their formality of contour and become magnificent trees.

Esculus, Alba, Flora, pleno. Double White Flowering Horse Chestnut. Like the European White, it is magnificent in stature, richly clothed, with broad, palmated leaves. Its massive growth contrasts well with trees of a more open, airy character, which in a great measure atones for the too great regularity of its form. The foliage is of the purest green, and when surmounted with its large, beautiful, hyacinth-like spikes of double white flowers, it is queen of all, as no other tree at the season of its blossoming can claim to rival it.

Esculus Rubicunda. Red Flowering Horse Chestnut. A remarkably fine variety, with showy red flowers, opening a little later than the Double White. The foliage is somewhat of a darker green. One of the most valuable of ornamental trees.



Catalpa.

Alnus Alder. The cut-leaved varieties of this family are particularly elegant and ornamental. They are rapid growers, with large, deeply cut foliage, almost fern-like in appearance. There are but few finer lawn trees. There are two varieties, the Cut-leaved and Imperial Cut-leaved, the latter being the most vigorous grower, with larger and more deeply cut foliage.

Catalpa. Two at least of the varieties of Catalpas are worthy of place in all collections, for their rapid growth, the great size of their heart-shaped leaves, and the large, showy, fragrant blossoms, which do not appear until July, when most other trees are through. They make effective and tropical looking lawn trees. These are Teas Japan and Speciosa.

Cornus Florida. Dogwood. This is one of our native trees that is not fully appreciated. It is remarkable for the size and showiness of its large white blossoms, which make their appearance in April, before the leaves, and cover the tree with immense snowflakes. One of the most conspicuous in the spring, and in autumn its foliage turns to a deep red, making it a

brilliant companion of the varied hued maples and other autumn foliage trees. Like many other good things, it is too common to be appreciated. Those who have only seen it in the woods have no idea of the improvement that a deep soil and open culture will make.

Pyrus Sorbus—Mountain Ash. One or more specimens of these should grace a lawn for the brilliant effect that the drooping clusters of bright red fruit that remain a long time on the tree produce. The European and Oak Leaved are the most graceful in form and preferable to plant.

Crataegus Thorn. There are a great many varieties of the Thorn both native and foreign, some of which justly deserve to be classed with the most beautiful small flowering trees. If two sorts only can be planted I would recommend Paul's New Scarlet and the Double White, these making a striking contrast; the flowers of each are double borne in dense clusters.



Teas New Weeping Mulberry.

Morus. Mulberry. The most striking and desirable for ornamental planting is Teas New Weeping Russian Mulberry, which forms a perfect umbrella shaped head with long, slender branches drooping to the ground.

Populus. Poplar. The species of poplar are very numerous, the two most prized varieties for planting at the present time are the Carolina and Golden. The former for its wonderfully rapid growth, fine pyramidal form, large leaves and the power it possesses to resist the coal smoke that destroys so many species of trees in large cities or near furnaces. The Golden Poplar for its color which is well retained through the season of foliage, producing a striking and desirable contrast.

Tilia. Linden or Lime. There are both foreign and native species. In France and Germany the European Linden forms the most celebrated avenues and boulevards. The finest for lawn planting are the White Leaved and the White Leaved Weeping; the former is a native variety, particularly noticeable for its white appearance and handsome form; the latter for its silvery foliage and pendulous habit, which is confined almost entirely to the end of the branches and the young growth. Both are among the finest of our ornamental trees.

Ulmus. Elm. The Elm family is so well known that it is unnecessary to refer to its beauty and value for ornamental planting. Our native White Elm has been termed by foreigners "the crowning glory of American forests," but its size renders it unfit for small lawns. I would call attention to the Camperdown Weeping Elm, which is one of the most picturesque of drooping trees, with dense, massive foliage. Very much wider spreading in its habits than the Weeping Willow or Teas Russian Weeping Mulberry. There are a number of evergreens that should be included in this which I omit for want of time. Having named a few trees that I consider especially desirable out of

the many that a beneficent Providence has bestowed upon us for our pleasure and comfort, I will now call attention to a few desirable shrubs:

Rhododendron. Rosebay. Of all evergreen flowering shrubs the *Rhododendron* is the most magnificent, the large, glassy, rubber like leaves, crowned with immense terminal clusters of brilliant flowers, make it the most showy ornament that a lawn can contain. The varieties of which the Catawbiense is parent are the most desirable and hardy. Even these are benefited in winter by a shading of evergreen boughs stood up about them to break the scalding rays of the winter sun.

Azela Pontica. Ghent Varieties. These rank next to the *Rhododendron* for the decoration of lawns; attaining a height of four to five feet, there are many varieties the principal colors being yellow, orange and red.

Cornus. Dogwood. Valuable ornaments when planted either singly or in groups or masses. Some have bright colored bark, others elegantly variegated foliage. The most striking of the latter is *Elegantissima* Variegata, which is one of the most desirable variegated shrubs in cultivation.

Cydonia Japonica. Japan Quince. There are no choicer shrubs for early spring flowering than the Scarlet and Blush Japan Quince; they bear the knife well and can be pruned in any desirable shape. They are very attractive as single specimens on the lawn or ornamental hedges. The foliage is a bright lively green. The large brilliant flowers which appear among the first in spring cover every branchlet before the leaves are developed.

Deutzia. A species of beautiful flowering shrubs for which we are indebted to Japan. They are hardy, of fine habit and foliage and very profuse in flowers which are produced in racemes four to six inches long, in the latter part of June.

Weigelia. This noble shrub was introduced from Japan about half a century ago. They produce in June and July superb trumpet shaped flowers of all shades of color from pure white to red. There are a great number of varieties which are being constantly increased, all of which are desirable.

Exochorda Grandiflora. A fine shrub literally covered with large white flowers in May. Should be in all collections.

Hydrangea. We are indebted to Japan for the finest type of Hydrangeas. *H. paniculata grandiflora* is remarkable in foliage and flower. One of the best and most attractive ornamental shrubs ever grown. It blooms the first year and gets better and grows larger with age. It grows three to five feet high; is as hardy as the oak, requiring no protection whatever in winter; blooms in July and August and will remain in bloom two or three months. The flowers are pure white, afterwards changing to pink; and are borne in immense pyramidal clusters often more than a foot long and nearly as far through. Another variety called *Ramis Pictus* (Red Branched) is a sterling novelty, producing flowers in immense sized trusses, color deep rose; the new growth of wood is of a deep reddish purple color, making it distinct from any other variety.

Corchorus. A very desirable, small shrub from Japan, producing beautiful double yellow blossoms July to October. This is desirable as there are so few hardy yellow flowered shrubs. The *Loniceras*, Upright Honeysuckle, are not as often seen as their merits deserve and several varieties of *Philadelphus* *Syringa* or Mock Orange are invaluable shrubs of vigorous habit, handsome foliage and beautiful white flowers produced in great profusion. For variety the cut-leaved Sumach should be planted, as the leaves are so finely cut as to be fern like and it assumes a beautiful ornamental color in fall. An assortment of the *Spiraea* family should not be omitted from all collections, as they are elegant low shrubs of easiest culture. The variety is great; by careful selection of a dozen sorts they will supply a succession of flowers from May to August. The Lilac is also indispensable in all plantings; there are plenty of sorts from which to select, from pure white and pink through the various shades of purple to blue. There are many other shrubs that should be included in this, but I have already occupied more of your time than I had intended.

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